



Amendment No. 6
To
Contract No. NN140000006
For
Vegetation Control and Debris Removal in Channels and Ponds
Between
Workquest
and the
City of Austin

- 1.0 The City hereby exercises this extension option for the subject contract. This extension option will be October 1, 2019 through September 30, 2020. One option will remain.
- 2.0 The total contract amount is increased by \$1,850,000.00 by this extension period. The total contract authorization is recapped below:

Action	Action Amount	Total Contract Amount
Initial Term: 10/01/2014 – 09/30/2015	\$1,850,000.00	\$1,850,000.00
Amendment No. 1: Option 1 – Extension 10/01/2015 – 09/30/2016	\$1,850,000.00	\$3,700,000.00
Amendment No. 2: Option 2 – Extension 10/01/2016 – 09/30/2017	\$1,850,000.00	\$5,550,000.00
Amendment No. 3: Option 3 – Extension 10/01/2017 – 09/30/2018	\$1,850,000.00	\$7,400,000.00
Amendment No. 4: Option 4 – Extension 10/01/2018 – 09/30/2019	\$1,850,000.00	\$9,250,000.00
Amendment No. 5: Vendor Change 10/23/2018	\$0.00	\$9,250,000.00
Amendment No. 6: Option 5 – Extension 10/01/2019 – 09/30/2020	\$1,850,000.00	\$11,100,000.00

- 3.0 MBE/WBE goals do not apply to this contract.
- 4.0 By signing this Amendment the Contractor certifies that the vendor and its principals are not currently suspended or debarred from doing business with the Federal Government, as indicated by the GSA List of Parties Excluded from Federal Procurement and Non-Procurement Programs, the State of Texas, or the City of Austin.
- 5.0 All other terms and conditions remain the same.

BY THE SIGNATURES affixed below, this amendment is hereby incorporated into and made a part of the above-referenced contract.

Sign/Date: Abby Monk 9/10/2019

Printed Name: Abby Monk
Authorized Representative

Workquest
1011 East 53rd ½ Street
Austin, Texas 78751-1703
(512) 451-8145
amonk@tibh.org

Sign/Date: Matthew Duree 9-10-19

Matthew Duree
Procurement Manager
City of Austin
Purchasing Office
124 W. 8th Street, Ste. 310
Austin, Texas 78701



Amendment No. 5
to
Contract No. NN140000006
For
Vegetation Control and Debris Removal in Channels and Ponds
Between
TIBH Industries, Inc.
with
Easter Seals Central Texas
and the
City of Austin

1.0 The Contract is hereby amended as follows: Change the vendor information as requested and documented by the vendor.

	From	To
Vendor Name	TIBH Industries, Inc. dba TIBH dba TIBH Industries dba TIBH Central Store	Workquest
Vendor Code	TEX4818500	TEX4818500
FEIN	[REDACTED]	[REDACTED]

2.0 All other terms and conditions of the Contract remain unchanged and in full force and effect.

BY THE SIGNATURE affixed below, this Amendment No. 5 is hereby incorporated into and made a part of the Contract.

A handwritten signature in blue ink that reads "Linell Goodin-Brown".

Linell Goodin-Brown
Contract Management Supervisor II
City of Austin, Purchasing Office

10-23-18

Date



Amendment No. 4
of
Contract No. NN140000006
for
Vegetation Control and Debris Removal Creeks and Ponds
between
TIBH Industries
Easter Seals
and the
City of Austin

- 1.0 The City hereby exercises the extension option for the above-referenced contract. Effective October 1, 2018, to September 30, 2019. Two options remain.
- 2.0 The total contract amount is increased by \$1,850,000.00 for the extension option period. The total Contract authorization is recapped below:

Term	Action Amount	Total Contract Amount
Basic Term: 10/01/14 – 09/30/15	\$1,850,000.00	\$1,850,000.00
Amendment No. 1: Option 1 10/01/15 – 09/30/16	\$1,850,000.00	\$3,700,000.00
Amendment No. 2: Option 2 10/01/16 – 09/30/17	\$1,850,000.00	\$5,550,000.00
Amendment No. 3: Option 3 10/01/17 – 09/30/18	\$1,850,000.00	\$7,400,000.00
Amendment No. 4: Option 4 10/01/18 – 09/30/19	\$1,850,000.00	\$9,250,000.00

- 3.0 MBE/WBE goals were not established for this contract.
- 4.0 By signing this Amendment, the Contractor certifies that the Contractor and its principals are not currently suspended or debarred from doing business with the Federal Government, as indicated by the General Services Administration (GSA) List of Parties Excluded from Federal Procurement and Non-Procurement Programs, the State of Texas, or the City of Austin.
- 5.0 All other terms and conditions remain the same.

BY THE SIGNATURES affixed below, this Amendment is hereby incorporated into and made a part of the above-referenced contract.

Signature and Date:

Abby Duree

8/30/2018

Printed Name:
Authorized Representative

TIBH Industries Inc.,
1011 E 53RD 1/2 ST
Austin, Texas 78751

Signature and Date:

Matthew Duree

Matthew Duree, Procurement Manager
City of Austin
Purchasing Office

9-17-18

Signature and Date:

Tod Marvin

8/28/2018

Printed Name:
Authorized Representative

Tod Marvin - President
Easter Seals Central Texas
Austin, Texas 78751



Amendment No. 3
of
Contract No. NN14000006
for
Vegetation Control and Debris Removal Creeks and Ponds
between
TIBH Industries
Easter Seals
and the
City of Austin

- 1.0 The City hereby exercises the extension option for the above-referenced contract. Effective October 1, 2017, to September 30, 2018. Three options remain.
- 2.0 The total contract amount is increased by \$1,850,000.00 for the extension option period. The total Contract authorization is recapped below:

Term	Action Amount	Total Contract Amount
Basic Term: 10/01/14 – 09/30/15	\$1,850,000.00	\$1,850,000.00
Amendment No. 1: Option 1 10/01/15 – 09/30/16	\$1,850,000.00	\$3,700,000.00
Amendment No. 2: Option 2 10/01/16 – 09/30/17	\$1,850,000.00	\$5,550,000.00
Amendment No. 3: Option 3 10/01/17 – 09/30/18	\$1,850,000.00	\$7,400,000.00

- 3.0 MBE/WBE goals were not established for this contract.
- 4.0 By signing this Amendment the Contractor certifies that the Contractor and its principals are not currently suspended or debarred from doing business with the Federal Government, as indicated by the General Services Administration (GSA) List of Parties Excluded from Federal Procurement and Non-Procurement Programs, the State of Texas, or the City of Austin.
- 5.0 All other terms and conditions remain the same.

BY THE SIGNATURES affixed below, this Amendment is hereby incorporated into and made a part of the above-referenced contract.

Signature and Date: Abbey Mone 8/25/2017
Printed Name: Abbey Mone
Authorized Representative

TIBH Industries Inc.,
1011 E 53RD 1/2 ST
Austin, Texas 78751

Signature and Date: Danielle Lord 8/25/17
Printed Name: Danielle Lord
City of Austin
Purchasing Office

Signature and Date: Lucas Wells 8-25-17
Printed Name: Lucas Wells
Authorized Representative

Easter Seals Central Texas
Austin, Texas 78751



Amendment No. 2
of
Contract No. NN140000006
for
Vegetation Control and Debris Removal Creeks and Ponds
between
TIBH Industries
Easter Seals
and the
City of Austin

- 1.0 The City hereby exercises the extension option for the above-referenced contract. Effective October 1, 2016, the term for the extension option will be October 1, 2016 to September 30, 2017 and there are four remaining options.
- 2.0 The total contract amount is increased by \$1,850,000.00 for the extension option period. The total Contract authorization is recapped below:

Term	Action Amount	Total Contract Amount
Basic Term: 10/01/14 – 09/30/15	\$1,850,000.00	\$1,850,000.00
Amendment No. 1: Option 1 10/01/15 – 09/30/16	\$1,850,000.00	\$3,700,000.00
Amendment No. 2: Option 2 10/01/16 – 09/30/17	\$1,850,000.00	\$5,550,000.00

- 3.0 MBE/WBE goals were not established for this contract.
- 4.0 By signing this Amendment the Contractor certifies that the Contractor and its principals are not currently suspended or debarred from doing business with the Federal Government, as indicated by the General Services Administration (GSA) List of Parties Excluded from Federal Procurement and Non-Procurement Programs, the State of Texas, or the City of Austin.
- 5.0 All other terms and conditions remain the same.

BY THE SIGNATURES affixed below, this Amendment is hereby incorporated into and made a part of the above-referenced contract.

Signature and Date: Abbey Mark 8/29/16
Printed Name: Abbey Mark
Authorized Representative

Signature and Date: Shawn Willett 9/8/16
Shawn Willett, Deputy Purchasing Officer
City of Austin
Purchasing Office

TIBH Industries Inc.,
1011 E 53RD 1/2 ST
Austin, Texas 78751

Signature and Date: Wally Colvin 8/29/16
Printed Name: Wally Colvin
Authorized Representative

Easter Seals Central Texas
Austin, Texas 78751



Amendment No. 1
of
Contract No. NN140000006
for
Vegetation Control and Debris Removal Creeks and Ponds
between
TIBH Industries
Easter Seals
and the
City of Austin

- 1.0 The City hereby exercises the extension option for the above-referenced contract. Effective October 1, 2015, the term for the extension option will be October 1, 2015 to September 30, 2016 and there are five remaining options.
- 2.0 The total contract amount is increased by \$1,850,000.00 for the extension option period. The total Contract authorization is recapped below:

Term	Action Amount	Total Contract Amount
Basic Term: 10/01/14 – 09/30/15	\$1,850,000.00	\$1,850,000.00
Amendment No. 1: Option 1 10/01/15 – 09/30/16	\$1,850,000.00	\$3,700,000.00

- 3.0 MBE/WBE goals were not established for this contract.
- 4.0 By signing this Amendment the Contractor certifies that the Contractor and its principals are not currently suspended or debarred from doing business with the Federal Government, as indicated by the General Services Administration (GSA) List of Parties Excluded from Federal Procurement and Non-Procurement Programs, the State of Texas, or the City of Austin.
- 5.0 All other terms and conditions remain the same.

BY THE SIGNATURES affixed below, this Amendment is hereby incorporated into and made a part of the above-referenced contract.

Signature and Date: Abbey Monk 7/10/15

Printed Name: Abbey Monk
Authorized Representative
Regional Marketing Manager

TIBH Industries Inc.,
1011 E 53RD 1/2 ST
Austin, Texas 78751

Signature and Date: [Signature] 9/15/15

Joe Barrios, Acting Contract Compliance
Supervisor
City of Austin
Purchasing Office

Signature and Date: [Signature] 7-10-15

Printed Name: Lucas Wells
Authorized Representative
Chief Program Officer

Easter Seals Central Texas

Austin, Texas 78751



Financial Service Department
Purchasing Office
124 W. 8th Street Suite 310 Austin, Texas 78767

September 30, 2014

TIBH Industries
Attn: Abby Monk
1011 E. 53rd ½ Street
Austin, Texas 78751

Dear Ms. Monk:

The Austin City Council approved the execution of a contract with your company for Vegetation Control & Debris Removal.

Responsible Department:	Austin Watershed Protection & Development Department
Department Contact Person:	Donna Lee Bliss
Department Contact Email Address:	donna-lee.bliss@austintexas.gov
Department Contact Telephone:	512-974-2530
Project Name:	Vegetation Control and Debris Removal Creeks and Ponds
Contractor Name:	TIBH Industries – Easter Seals
Contract Number:	MA 6300 NN140000006
Contract Period:	10/1/2014 – 9/30/2015
Dollar Amount	\$1,850,000
Extension Options:	Six (6) 12-month options \$1,850,000 each option
Requisition Number:	RQM 6300 14071600459
Agenda Item Number:	64
Council Approval Date:	September 25, 2014

Thank you for your interest in doing business with the City of Austin. If you have any questions regarding this purchase, please contact the person referenced under Department Contact Person above.

Sincerely,

Georgia L. Billela
Buyer II
Purchasing Office
Financial Service Department

cc: Donna Lee Bliss

**CONTRACT BETWEEN THE CITY OF AUSTIN
AND
TIBH INDUSTRIES, INC.
WITH
EASTER SEALS CENTRAL TEXAS
FOR
VEGETATION CONTROL AND DEBRIS REMOVAL IN CHANNELS AND PONDS**

This Contract is made and entered into effective as of October 1, 2014 by and between the City of Austin ("City"), a home-rule municipality incorporated by the State of Texas, and TIBH Industries, Inc. ("Contractor") which has assigned the performance of this Contract to Easter Seals Central Texas ("Performing Party") to provide vegetation control and debris removal in creeks and channels (at frequencies and time frames specified in Exhibit A) and in detention and water quality ponds (at frequencies and time frames specified in Exhibit B) to the City of Austin, Texas, pursuant to the authority granted in compliance with the provisions of Chapter 122, Title 8, Human Resources Code.

The undersigned parties do hereby certify that, (i) the services specified above are necessary and essential for activities that are within the statutory functions and programs of the City, and (ii) the services, supplies or contract, are not required by Section 21 of Article XVI of the Constitution of Texas to be supplied under contract given to the lowest responsible bidder.

SECTION 1. GRANT OF AUTHORITY, SERVICES AND DUTIES

1.1 **Engagement of the Contractor.** Subject to the general supervision and control of the City and subject to the provisions of the Terms and Conditions contained herein, the Contractor is engaged to provide the services set forth in Section 2, Scope of Work.

1.2 **Responsibilities of the Contractor.** The Contractor shall provide all technical and professional expertise, knowledge, management, and other resources required for accomplishing all aspects of the tasks and associated activities identified in the Scope of Work. In the event that the need arises for the Contractor to perform services beyond those stated in the Scope of Work, the Contractor and the City shall negotiate mutually agreeable terms and compensation for completing the additional services.

1.3 **Responsibilities of the City.** The City's Contract Manager will be responsible for exercising general oversight of the Contractor's activities in completing the Scope of Work. Specifically, the Contract Manager will represent the City's interests in resolving day-to-day issues that may arise during the term of this Contract, shall participate regularly in conference calls or meetings for status reporting, shall promptly review any written reports submitted by the Contractor, and shall approve all invoices for payment, as appropriate. The City's Contract Manager shall give the Contractor timely feedback on the acceptability of progress and task reports.

1.4 **Designation of Key Personnel.** The Contractor's Contract Manager for this engagement shall be Abby Monk, Phone: (512) 451-8145, Email Address: amonk@tibh.org. The City's Contract Manager for the engagement shall be Donna Lee Bliss, Phone: (512) 974-2530, Email Address: donna-lee.bliss@austintexas.gov. The City and the Contractor resolve to keep the same key personnel assigned to this engagement throughout its term. In the event that it becomes necessary for the Contractor to replace any key personnel, the replacement will be an individual having equivalent experience and competence in executing projects such as the one described herein. Additionally, the Contractor will promptly notify the City Contract Manager and obtain approval for the replacement. Such approval shall not be unreasonably withheld.

SECTION 2. SCOPE OF WORK

2.1 **Contractor's Obligations.** The Contractor shall fully and timely provide all deliverables described herein and in the Contractor's Offer in strict accordance with the terms, covenants, and conditions of the Contract and all applicable Federal, state, and local laws, rules, and regulations.

2.2 **Tasks.** In order to accomplish the work described herein, the Contractor and Performing Party shall perform each of the following tasks:

2.2.1 The Performing Party shall perform vegetation control and debris removal in creeks and channels (at frequencies and time frames specified in Exhibit A), in detention and water quality ponds (at frequencies

and time frames specified in Exhibit B), weather permitting. Performing Party shall haul excessive vegetation and debris from the specified job site locations to a landfill acceptable to the City.

2.2.2 The Contractor and Performing Party shall not perform work outside the designated time frame without the prior written approval of the City. Any such work may result in the invoices not being honored.

2.2.3 The Performing Party shall perform the work in accordance with the Scope of Work attached hereto as Exhibit C.

2.2.4 The Performing Party shall perform the work in accordance with the Environmental Criteria Manual attached hereto as Exhibit D.

2.2.5 To receive payment, the Performing Party shall conduct the work within the time limits of this Contract.

2.3 **Modifications.** Job sites may be added or deleted by the City in its sole discretion. Any such modifications shall be conveyed to the Contractor and Performing Party by a written modification by the City's Contract Manager and shall be deemed accepted upon receipt by the Contractor.

SECTION 3. COMPENSATION

3.1 **Contract Amount.** The Contractor will be paid as indicated herein upon the successful completion of the Scope of Work for each creek or pond area. In consideration for the services to be performed under this Contract, the Contractor shall be paid an amount not-to-exceed \$1,850,000 for all fees and expenses for the first twelve (12) month term with six (6) twelve (12) month extension options in an amount not-to-exceed \$1,850,000 per extension option for a total amount not-to-exceed \$12,950,000 for all fees and expenses.

3.2 **Payment for Services.** The Contractor shall pay the Performing Party, as assignee and servicing agent of Performing Party's interest in the payment under this Contract (as directed), for services received upon receipt of a proper invoice or voucher prepared by the Performing Party to Contractor, within thirty (30) days from receipt of same, provided that favorable inspection of work performed is documented and authorization to pay is granted. Payment for services performed shall be billed at a rate based upon the amount of the work completed as noted on the invoice and shown in "before" and "after" digital pictures, based on the costs set forth below; provided, however that favorable inspection of work performed is documented and authorization to pay is granted by the City.

3.2.1 The standard rates shall be as follows:

<u>For Creeks and Channels:</u>	Class C	\$0.00525 per square foot
	Class B	\$0.019 per square foot
	Class A	\$0.021 per square foot
	Class A2	\$0.050 per square foot
	Class A3	\$0.068 per square foot
		Minimum charge per creek location - \$100.00
<u>Special Rate for Large Creek Areas:</u>	Class A4	\$0.011 per square foot
<u>Ponds:</u>	Class C	\$0.00525 per square foot
		Minimum charge per pond location - \$100.00
<u>Pond Raking:</u>		Add \$0.010 per square foot
<u>Creek Raking:</u>		To be determined on a case by case basis
<u>Non-scheduled, Ad Hoc Locations:</u>	Class C	\$0.00525 per square foot
		Minimum charge per site - \$100.00
<u>Landfill Hauling and Tire Disposal:</u>	\$167.50 per load plus any tire fees. Landfill tickets shall be attached to invoices to verify number of loads and tires.	

Invasive Woody Vegetation:

Includes cutting, treating, and removal:

Tree size 1 - 3" diameter: \$50 per tree

Tree size 3 - 5" diameter: \$100 per tree

Tree size 5 - 8" diameter: \$150 per tree

Following up herbicide treatment: \$10 per tree

Invasive Shrubbery Vegetation:

First trip includes cutting, raking, removal & treat:

0 - 10,000 sq ft: \$0.35 per sq ft

10,000- 30,000 sq ft: \$0.25 per sq ft

Greater than 30,000 sq ft: \$0.17 per sq ft

Follow-up trip includes cutting, removal & treat:

\$0.10 per sq ft

Herbicide Application Only:

\$0.10 per sq ft

Description of Class Designations:

Class A1: Easy access, steep slopes, some trees, some cane, free flowing.

Class A2: Limited access, steep slopes, some trees, lot of cane, some standing water.

Class A3: Limited access, steep slopes, lot of trees, lot of cane, standing water.

Class B: Easy access, variable slopes, no trees, some cane, free flowing.

Class C: Easy access, gentle slopes, no trees or cane, free flowing.

3.3 Economic Price Adjustment. Prices shown in this Contract shall remain firm for the first twelve (12) months of the Contract. After that, in recognition of the potential for fluctuation of the Contractor's cost, a price adjustment (increase or decrease) may be requested by either the City or the Contractor subject to the following considerations:

3.3.1 Price Increases

3.3.1.1 Requests for price increases shall be made in writing and submitted to the City Contract Manager. The letter shall be signed by a person with the authority to bind the Contractor contractually, shall reference the Contract number, and include the following documentation:

3.3.1.1.1 an itemized, revised price list with the effective date of the proposed increase;

3.3.1.1.2 the version of the U.S. Department of Labor Employment Cost Index for Wages and Salaries for all Private Industry Workers (the "Index") current as of the date of the Contractor's Offer; and a copy of the index for the most current period.

3.2.1.2 Request for price increases shall be made in writing and submitted to the City Contract Manager prior to each yearly anniversary date of Contract. Prices will only be considered for an increase at that time. Once received, the City will have thirty (30) days to review and approve/disapprove the requested increase. Should the City not agree with the requested increase, Contractor may either maintain the prices currently in effect, negotiate an acceptable increase with the City or terminate the Contract.

3.2.1.3 The proposed percentage change between the current contract price and the requested price shall not exceed the percentage change between the Index in effect at the beginning of the current review period and the one in effect at the time the price increase is requested. Except in the case of emergency situations, the requested index related or non-index related price increase shall not exceed five percent (5%) for any single line item, and in no event shall the total amount of the Contract be automatically increased as a result of the increase in any one or more line items made pursuant to this provision.

3.2.1.4 Since the perceived need for price increases may be due in whole or in part to factors other than index changes, the City may consider approving fully-documented increase requests

which, in the Contractor's opinion, justify price increases for one or more line items in the Contract. If index changes are responsible in part for the requested change, those changes shall be documented as previously described above.

3.2.2 Price Decreases

3.2.2.1 Proposed price decreases may be offered to the City at any time, and become effective upon acceptance by the City unless a different effective date is specified by the Contractor. Request for price decreases by the City will be based on the same documentation as price increase request. Price decrease offers may also be subject to negotiation.

3.2.2.2 Price decreases based on relevant factors may be requested by the City at any time. Such request shall be accompanied by a complete statement of the City's justification for the request. The Contractor shall have thirty (30) calendar days to respond to the City's request. Following receipt of the Contractor's agreement with the requested decrease, the City may implement the decrease at any time. Should the Contractor not agree with the requested decrease, the City may either maintain the prices currently in effect, negotiate with the contractor, or terminate the Contract.

3.4 Invoices.

3.4.1 **All invoices shall be received no later than October 7 for work done the previous annual term. Invoices received after this date will not be paid. Invoices shall contain a unique invoice number, the purchase order or delivery order number and the master agreement number, the Department's Name, and the name of the point of contact for the Department.** Invoices shall be itemized on a job site basis. Invoices for partial work completion at job sites shall not be acceptable unless agreed to by both parties prior to initiation of the work. The Contractor's name and, if applicable, the tax identification number on the invoice shall exactly match the information in the Contractor's registration with the City. Unless otherwise instructed in writing, the City may rely on the remittance address specified on the Contractor's invoice. Invoices received without all required information and documentation cannot be processed and will be returned to the Contractor. Invoices shall be mailed to the below address:

	City of Austin
Department	Watershed Protection
Attn:	Donna Lee Bliss
Address	505 Barton Springs Rd., #1200
City, State, Zip Code	Austin, TX 78704

3.4.2 Invoices for labor shall include a copy of all time-sheets with trade labor rate and deliverables order number clearly identified. Invoices shall also include a tabulation of work-hours at the appropriate rates and grouped by work order number. Time billed for labor shall be limited to hours actually worked at the work site.

3.4.3 Federal excise taxes, State taxes, or City sales taxes shall not be included in the invoiced amount. The City will furnish a tax exemption certificate upon request.

3.5 Payment.

3.5.1 All proper invoices received by the City will be paid within thirty (30) calendar days of the City's receipt of the deliverables or of the invoice, whichever is later.

3.5.2 **If payment is not timely made, (per this paragraph), interest shall accrue on the unpaid balance at the lesser of the rate specified in Texas Government Code Section 2251.025 or the maximum lawful rate; except, if payment is not timely made for a reason for which the City may withhold payment hereunder, interest shall not accrue until ten (10) calendar days after the grounds for withholding payment have been resolved.**

3.5.3 The City may withhold or off set the entire payment or part of any payment otherwise due the Contractor to such extent as may be necessary on account of:

3.5.3.1 delivery of defective or non-conforming deliverables by the Contractor;

3.5.3.2 third party claims, which are not covered by the insurance which the Contractor is required to provide, are filed or reasonable evidence indicating probable filing of such claims;

3.5.3.3 damage to the property of the City or the City's agents, employees or contractors, which is not covered by insurance required to be provided by the Contractor;

3.5.3.4 reasonable evidence that the Contractor's obligations will not be completed within the time specified in the Contract, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

3.5.3.5 failure of the Contractor to submit proper invoices with all required attachments and supporting documentation; or

3.5.3.6 failure of the Contractor to comply with any material provision of the Contract Documents.

3.5.4 Notice is hereby given of Article VIII, Section 1 of the Austin City Charter which prohibits the payment of any money to any person, firm or corporation who is in arrears to the City for taxes, and of §2-8-3 of the Austin City Code concerning the right of the City to offset indebtedness owed the City.

3.5.5 Payment will be made by check unless the parties mutually agree to payment by credit card or electronic transfer of funds. The Contractor agrees that there shall be no additional charges, surcharges, or penalties to the City for payments made by credit card or electronic transfer of funds.

3.6 **Non-Appropriation.** The awarding or continuation of this Contract is dependent upon the availability of funding. The City's payment obligations are payable only and solely from funds Appropriated and available for this Contract. The absence of Appropriated or other lawfully available funds shall render the Contract null and void to the extent funds are not Appropriated or available and any deliverables delivered but unpaid shall be returned to the Contractor. The City shall provide the Contractor written notice of the failure of the City to make an adequate Appropriation for any fiscal year to pay the amounts due under the Contract, or the reduction of any Appropriation to an amount insufficient to permit the City to pay its obligations under the Contract. In the event of non or inadequate appropriation of funds, there will be no penalty nor removal fees charged to the City.

3.7 **Final Payment and Close-Out.**

3.7.1 The making and acceptance of final payment will constitute:

3.7.1.1 a waiver of all claims by the City against the Contractor, except claims (1) which have been previously asserted in writing and not yet settled, (2) arising from defective work appearing after final inspection, (3) arising from failure of the Contractor to comply with the Contract or the terms of any warranty specified herein, (4) arising from the Contractor's continuing obligations under the Contract, including but not limited to indemnity and warranty obligations, or (5) arising under the City's right to audit; and

3.7.1.2 a waiver of all claims by the Contractor against the City other than those previously asserted in writing and not yet settled.

SECTION 4. TERM AND TERMINATION

4.1 **Term of Contract.** The Contract shall become effective on October 1, 2014 and shall remain in effect through September 30, 2015 or the City terminates the Contract. The Contract may be extended thereafter for up to six (6) additional twelve (12) month periods, subject to the approval of the Contractor and the City Purchasing Officer or his designee.

4.1.1 All work for the initial annual term and subsequent extensions shall be completed by September 12th.

4.1.2 Upon expiration of the initial term or period of extension, the Contractor agrees to hold over under the terms and conditions of this Contract for such a period of time as is reasonably necessary to re-solicit and/or complete the project (not to exceed 120 calendar days unless mutually agreed on in writing).

4.2 **Right To Assurance.** Whenever one party to the Contract in good faith has reason to question the other party's intent to perform, demand may be made to the other party for written assurance of the intent to perform. In

the event that no assurance is given within the time specified after demand is made, the demanding party may treat this failure as an anticipatory repudiation of the Contract.

4.3 **Default.** The Contractor shall be in default under the Contract if the Contractor (a) fails to fully, timely and faithfully perform any of its material obligations under the Contract, (b) fails to provide adequate assurance of performance under the "Right to Assurance paragraph herein, (c) becomes insolvent or seeks relief under the bankruptcy laws of the United States or (d) makes a material misrepresentation in Contractor's Offer, or in any report or deliverable required to be submitted by Contractor to the City.

4.4 **Termination For Cause..** In the event of a default by the Contractor, the City shall have the right to terminate the Contract for cause, by written notice effective ten (10) calendar days, unless otherwise specified, after the date of such notice, unless the Contractor, within such ten (10) day period, cures such default, or provides evidence sufficient to prove to the City's reasonable satisfaction that such default does not, in fact, exist. The City may place Contractor on probation for a specified period of time within which the Contractor shall correct any non-compliance issues. Probation shall not normally be for a period of more than nine (9) months, however, it may be for a longer period, not to exceed one (1) year depending on the circumstances. If the City determines the Contractor has failed to perform satisfactorily during the probation period, the City may proceed with suspension. In the event of a default by the Contractor, the City may suspend or debar the Contractor in accordance with the "City of Austin Purchasing Office Probation, Suspension and Debarment Rules for Vendors" and remove the Contractor from the City's vendor list for up to five (5) years and any Offer submitted by the Contractor may be disqualified for up to five (5) years. In addition to any other remedy available under law or in equity, the City shall be entitled to recover all actual damages, costs, losses and expenses, incurred by the City as a result of the Contractor's default, including, without limitation, cost of cover, reasonable attorneys' fees, court costs, and prejudgment and post-judgment interest at the maximum lawful rate. All rights and remedies under the Contract are cumulative and are not exclusive of any other right or remedy provided by law.

4.5 **Termination Without Cause.** The City shall have the right to terminate the Contract, in whole or in part, without cause any time upon thirty (30) calendar days prior written notice. Upon receipt of a notice of termination, the Contractor shall promptly cease all further work pursuant to the Contract, with such exceptions, if any, specified in the notice of termination. The City shall pay the Contractor, to the extent of funds Appropriated or otherwise legally available for such purposes, for all goods delivered and services performed and obligations incurred prior to the date of termination in accordance with the terms hereof.

4.6 **Fraud.** Fraudulent statements by the Contractor on any Offer or in any report or deliverable required to be submitted by the Contractor to the City shall be grounds for the termination of the Contract for cause by the City and may result in legal action.

SECTION 5. OTHER DELIVERABLES

5.1 **Insurance:** The following insurance requirements apply.

5.1.1 General Requirements.

5.1.1.1 The Contractor and Performing Party shall at a minimum carry insurance in the types and amounts indicated herein for the duration of the Contract and during any warranty period.

5.1.1.2 The Contractor and Performing Party shall provide a Certificate of Insurance as verification of coverages required below to the City at the below address prior to Contract execution and within fourteen (14) calendar days after written request from the City.

5.1.1.3 The Contractor and Performing Party shall also forward a Certificate of Insurance to the City whenever a previously identified policy period has expired, or an extension option or holdover period is exercised, as verification of continuing coverage.

5.1.1.4 The Contractor and Performing Party shall not commence work until the required insurance is obtained and has been reviewed by City. Approval of insurance by the City shall not relieve or decrease the liability of the Contractor hereunder and shall not be construed to be a limitation of liability on the part of the Contractor.

5.1.1.5 The Contractor's and Performing Party's insurance coverage shall be written by companies licensed to do business in the State of Texas at the time the policies are issued and shall be written by companies with A.M. Best ratings of B+VII or better.

5.1.1.6 All endorsements naming the City as additional insured, waivers, and notices of cancellation endorsements as well as the Certificate of Insurance shall be mailed to the following address:

City of Austin
Purchasing Office
P. O. Box 1088
Austin, Texas 78767

5.1.1.7 The "other" insurance clause shall not apply to the City where the City is an additional insured shown on any policy. It is intended that policies required in the Contract, covering both the City and the Contractor, shall be considered primary coverage as applicable.

5.1.1.8 If insurance policies are not written for amounts specified in Paragraph 5.1.2, Specific Coverage Requirements, the Contractor and Performing Party shall carry Umbrella or Excess Liability Insurance for any differences in amounts specified. If Excess Liability Insurance is provided, it shall follow the form of the primary coverage.

5.1.1.9 The City shall be entitled, upon request, at an agreed upon location, and without expense, to review certified copies of policies and endorsements thereto and may make any reasonable requests for deletion or revision or modification of particular policy terms, conditions, limitations, or exclusions except where policy provisions are established by law or regulations binding upon either of the parties hereto or the underwriter on any such policies.

5.1.1.10 The City reserves the right to review the insurance requirements set forth during the effective period of the Contract and to make reasonable adjustments to insurance coverage, limits, and exclusions when deemed necessary and prudent by the City based upon changes in statutory law, court decisions, the claims history of the industry or financial condition of the insurance company as well as the Contractor and Performing Party.

5.1.1.11 The Contractor and Performing Party shall not cause any insurance to be canceled nor permit any insurance to lapse during the term of the Contract or as required in the Contract.

5.1.1.12 The Contractor and Performing Party shall be responsible for premiums, deductibles and self-insured retentions, if any, stated in policies. All deductibles or self-insured retentions shall be disclosed on the Certificate of Insurance.

5.1.1.13 The Contractor and Performing Party shall endeavor to provide the City thirty (30) calendar days written notice of erosion of the aggregate limits below occurrence limits for all applicable coverages indicated within the Contract.

5.1.2 **Specific Coverage Requirements.** The Contractor and Performing Party shall at a minimum carry insurance in the types and amounts indicated below for the duration of the Contract, including extension options and hold over periods, and during any warranty period. These insurance coverages are required minimums and are not intended to limit the responsibility or liability of the Contractor and Performing Party.

5.1.2.1 **Commercial General Liability Insurance.** The minimum bodily injury and property damage per occurrence are \$500,000 for coverages A (Bodily Injury and Property Damage) and B (Personal and Advertising Injuries). The policy shall contain the following provisions and endorsements.

5.1.2.1.1 Contractual liability coverage for liability assumed under the Contract and all other Contracts related to the project.

5.1.2.1.2 Contractor Work.

5.1.2.1.3 Products/Completed Operations Liability for the duration of the warranty period.

5.1.2.1.4 Waiver of Subrogation, Endorsement CG 2404, or equivalent coverage.

5.1.2.1.5 Thirty (30) calendar day Notice of Cancellation, Endorsement CG 0205, or equivalent coverage.

5.1.2.1.6 The City of Austin listed as an additional insured, Endorsement CG 2010, or equivalent coverage.

5.1.2.2 **Business Automobile Liability Insurance.** The Contractor and Performing Party shall provide coverage for all owned, non-owned and hired vehicles with a minimum combined single limit of \$500,000 per occurrence for bodily injury and property damage. Alternate acceptable limits are \$250,000 bodily injury per person, \$500,000 bodily injury per occurrence and at least \$100,000 property damage liability per accident. The policy shall contain the following endorsements:

5.1.2.2.1 Waiver of Subrogation, Endorsement CA0444, or equivalent coverage.

5.1.2.2.2 Thirty (30) calendar days Notice of Cancellation, Endorsement CA0244, or equivalent coverage.

5.1.2.2.3 The City of Austin listed as an additional insured, Endorsement CA2048, or equivalent coverage.

5.1.2.3 **Worker's Compensation and Employers' Liability Insurance.** Coverage shall be consistent with statutory benefits outlined in the Texas Worker's Compensation Act (Section 401). The minimum policy limits for Employer's Liability are \$100,000 bodily injury each accident, \$500,000 bodily injury by disease policy limit and \$100,000 bodily injury by disease each employee. The policy shall contain the following provisions and endorsements:

5.1.2.3.1 The Contractor's and Performing Party's policy shall apply to the State of Texas.

5.1.2.3.2 Waiver of Subrogation, Form WC420304, or equivalent coverage.

5.1.2.3.3 Thirty (30) calendar days Notice of Cancellation, Form WC420601, or equivalent coverage.

5.1.2.4 **Endorsements.** The specific insurance coverage endorsements specified above, or their equivalents shall be provided. In the event that endorsements, which are the equivalent of the required coverage, are proposed to be substituted for the required coverage, copies of the equivalent endorsements shall be provided for the City's review and approval.

5.2 **Equal Opportunity.**

5.2.1 **Equal Employment Opportunity.** No Contractor or Contractor's agent shall engage in any discriminatory employment practice as defined in Chapter 5-4 of the City Code. No Bid submitted to the City shall be considered, nor any Purchase Order issued, or any Contract awarded by the City unless the Contractor has executed and filed with the City Purchasing Office a current Non-Discrimination Certification. The Contractor shall sign and return the Non-Discrimination Certification attached hereto as Exhibit E. Non-compliance with Chapter 5-4 of the City Code may result in sanctions, including termination of the contract and the Contractor's suspension or debarment from participation on future City contracts until deemed compliant with Chapter 5-4.

5.2.2 **Americans With Disabilities Act (ADA) Compliance.** No Contractor, or Contractor's agent shall engage in any discriminatory employment practice against individuals with disabilities as defined in the ADA.

5.3 **Acceptance of Incomplete or Non-Conforming Deliverables.** If, instead of requiring immediate correction or removal and replacement of defective or non-conforming deliverables, the City prefers to accept it, the City may do so. The Contractor and Performing Party shall pay all claims, costs, losses and damages attributable to the City's evaluation of and determination to accept such defective or non-conforming deliverables. If any such acceptance occurs prior to final payment, the City may deduct such amounts as are necessary to compensate the City for the diminished value of the defective or non-conforming deliverables. If the acceptance occurs after final payment, such amount will be refunded to the City by the Contractor.

5.4 **Delays.**

5.4.1 The City may delay scheduled delivery or other due dates by written notice to the Contractor and Performing Party if the City deems it is in its best interest. If such delay causes an increase in the cost of the work under the Contract, the City and the Contractor and Performing Party shall negotiate an equitable adjustment for costs incurred by the Contractor Performing Party in the Contract price and execute an amendment to the Contract. The Contractor and Performing Party shall assert its right to an adjustment within thirty (30) calendar days from the date of receipt of the notice of delay. Failure to agree on any adjusted price shall be handled under the Dispute Resolution process specified herein. However, nothing in this provision shall excuse the Contractor and Performing Party from delaying the delivery as notified.

5.4.2 Neither party shall be liable for any default or delay in the performance of its obligations under this Contract if, while and to the extent such default or delay is caused by acts of God, fire, riots, civil commotion, labor disruptions, sabotage, sovereign conduct, or any other cause beyond the reasonable control of such Party. In the event of default or delay in Contract performance due to any of the foregoing causes, then the time for completion of the services will be extended; provided, however, in such an event, a conference will be held within three (3) business days to establish a mutually agreeable period of time reasonably necessary to overcome the effect of such failure to perform.

SECTION 6. WARRANTIES

6.1 **Warranty – Price.**

6.1.1 The Contractor warrants the prices quoted in the Offer are no higher than the Contractor's current prices on orders by others for like deliverables under similar terms of purchase.

6.1.2 The Contractor certifies that the prices in the Offer have been arrived at independently without consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such fees with any other firm or with any competitor.

6.1.3 In addition to any other remedy available, the City may deduct from any amounts owed to the Contractor, or otherwise recover, any amounts paid for items in excess of the Contractor's current prices on orders by others for like deliverables under similar terms of purchase.

6.2 **Warranty – Services.** The Contractor warrants and represents that all services to be provided to the City under the Contract will be fully and timely performed in a good and workmanlike manner in accordance with generally accepted industry standards and practices, the terms, conditions, and covenants of the Contract, and all applicable Federal, state and local laws, rules or regulations.

6.2.1 The Contractor may not limit, exclude or disclaim the foregoing warranty or any warranty implied by law, and any attempt to do so shall be without force or effect.

6.2.2 The warranty period shall be from the date the services are performed until the date the services are required again. If during the warranty period, one or more of the warranties are breached, the Contractor shall promptly upon receipt of demand perform the services again in accordance with above standard at no additional cost to the City. All costs incidental to such additional performance shall be borne by the Contractor. The City shall endeavor to give the Contractor written notice of the breach of warranty within thirty (30) calendar days of discovery of the breach of warranty, but failure to give timely notice shall not impair the City's rights under this section.

6.2.3 If the Contractor is unable or unwilling to perform its services in accordance with the above standard as required by the City, then in addition to any other available remedy, the City may reduce the amount of services it may be required to purchase under the Contract from the Contractor, and purchase conforming services from other sources. In such event, the Contractor shall pay to the City upon demand the increased cost, if any, incurred by the City to procure such services from another source.

SECTION 7. MISCELLANEOUS

7.1 **Place and Condition of Work.** The City shall provide the Performing Party access to the sites where the Performing Party is to perform the services as required in order for the Performing Party to perform the services in a timely and efficient manner in accordance with and subject to the applicable security laws, rules, and regulations. The Contractor and Performing Party acknowledges that it has satisfied itself as to the nature of the City's service requirements and specifications, the location and essential characteristics of the work sites, the quality and quantity of materials, equipment, labor and facilities necessary to perform the services, and any other condition or state of fact which could in any way affect performance of the Contractor's and Performing Party's obligations under the Contract. The Contractor hereby releases and holds the City harmless from and against any liability or claim for damages of any kind or nature if the actual site or service conditions differ from expected conditions.

7.2 Workforce.

7.2.1 The Contractor and Performing Party shall employ only orderly and competent workers, skilled in the performance of the services which they will perform under the Contract.

7.2.2 The Contractor and the Performing Party's employees shall not while engaged in participating or responding to a solicitation or while in the course and scope of delivering goods or services under a City of Austin contract or on the City's property:

7.2.2.1 use or possess a firearm, including a concealed handgun that is licensed under state law, except as required by the terms of the Contract; and

7.2.2.2 use or possess alcoholic or other intoxicating beverages, illegal drugs or controlled substances, nor may such workers be intoxicated, or under the influence of alcohol or drugs, on the job.

7.2.3 If the City or the City's representative notifies the Contractor or Performing Party that any worker is incompetent, disorderly or disobedient, has knowingly or repeatedly violated safety regulations, has possessed any firearms, or has possessed or was under the influence of alcohol or drugs on the job, the Contractor shall immediately remove such worker from Contract services, and may not employ such worker again on Contract services without the City's prior written consent.

7.3 **Compliance with Health, Safety, and Environmental Regulations.** The Contractor and the Performing Party shall comply fully with all applicable federal, state, and local health, safety, and environmental laws, ordinances, rules and regulations in the performance of the services, including but not limited to those promulgated by the City and by the Occupational Safety and Health Administration (OSHA). In case of conflict, the most stringent safety requirement shall govern. The Contractor shall indemnify and hold the City harmless from and against all claims, demands, suits, actions, judgments, fines, penalties and liability of every kind arising from the breach of the Contractor's obligations under this paragraph.

7.4 **Significant Event.** The Contractor or Performing Party shall immediately notify the City's Contract Manager of any current or prospective "significant event" on an ongoing basis. All notifications shall be submitted in writing to the Contract Manager. As used in this provision, a "significant event" is any occurrence or anticipated occurrence which might reasonably be expected to have a material effect upon the Contractor's ability to meet its contractual obligations. Significant events may include but not be limited to the following:

7.4.1 disposal of major assets;

7.4.2 any major computer software conversion, enhancement or modification to the operating systems, security systems, and application software, used in the performance of this Contract;

7.4.3 any significant termination or addition of provider contracts;

7.4.4 the Contractor's insolvency or the imposition of, or notice of the intent to impose, a receivership, conservatorship or special regulatory monitoring, or any bankruptcy proceedings, voluntary or involuntary, or reorganization proceedings;

7.4.5 strikes, slow-downs or substantial impairment of the Contractor's facilities or of other facilities used by the Contractor in the performance of this Contract;

7.4.6 reorganization, reduction and/or relocation in key personnel;

7.4.7 known or anticipated sale, merger, or acquisition;

7.4.8 known, planned or anticipated stock sales;

7.4.9 any litigation against the Contractor; or

7.4.10 significant change in market share or product focus.

7.5 **Right To Audit.**

7.5.1 The Contractor and Performing Party agree that the representatives of the Office of the City Auditor or other authorized representatives of the City shall have access to, and the right to audit, examine, or reproduce, any and all records of the Contractor related to the performance under this Contract. The Contractor shall retain all such records for a period of three (3) years after final payment on this Contract or until all audit and litigation matters that the City has brought to the attention of the Contractor are resolved, whichever is longer. The Contractor agrees to refund to the City any overpayments disclosed by any such audit.

7.6 **Stop Work Notice.** The City may issue an immediate Stop Work Notice in the event the Contractor and Performing Party is observed performing in a manner that is in violation of Federal, state, or local guidelines, or in a manner that is determined by the City to be unsafe to either life or property. Upon notification, the Contractor will cease all work until notified by the City that the violation or unsafe condition has been corrected. The Contractor shall be liable for all costs incurred by the City as a result of the issuance of such Stop Work Notice.

7.7 **Indemnity.**

7.7.1 Definitions:

7.7.1.1 "Indemnified Claims" shall include any and all claims, demands, suits, causes of action, judgments and liability of every character, type or description, including all reasonable costs and expenses of litigation, mediation or other alternate dispute resolution mechanism, including attorney and other professional fees for:

7.7.1.1.1 damage to or loss of the property of any person (including, but not limited to the City, the Contractor, the Performing Party and their respective agents, officers, and employees; and third parties); and/or;

7.7.1.1.2 death, bodily injury, illness, disease, worker's compensation, loss of services, or loss of income or wages to any person (including but not limited to the agents, officers and employees of the City, the Contractor, the Performing Party and third parties),

7.7.1.2 "Fault" shall include the sale of defective or non-conforming deliverables, negligence, willful misconduct, or a breach of any legally imposed strict liability standard.

7.7.2 **THE CONTRACTOR SHALL DEFEND (AT THE OPTION OF THE CITY), INDEMNIFY, AND HOLD THE CITY, ITS SUCCESSORS, ASSIGNS, OFFICERS, EMPLOYEES AND ELECTED OFFICIALS HARMLESS FROM AND AGAINST ALL INDEMNIFIED CLAIMS DIRECTLY ARISING OUT OF, INCIDENT TO, CONCERNING OR RESULTING FROM THE FAULT OF**

THE CONTRACTOR, PERFORMING PARTY, OR THE CONTRACTOR'S AGENTS OR EMPLOYEES, IN THE PERFORMANCE OF THE CONTRACTOR'S OBLIGATIONS UNDER THE CONTRACT. NOTHING HEREIN SHALL BE DEEMED TO LIMIT THE RIGHTS OF THE CITY OR THE CONTRACTOR (INCLUDING, BUT NOT LIMITED TO, THE RIGHT TO SEEK CONTRIBUTION) AGAINST ANY THIRD PARTY WHO MAY BE LIABLE FOR AN INDEMNIFIED CLAIM.

7.8 **Claims.** If any claim, demand, suit, or other action is asserted against the Contractor which arises under or concerns the Contract, or which could have a material adverse effect on the Contractor's ability to perform thereunder, the Contractor shall give written notice thereof to the City within ten (10) calendar days after receipt of notice by the Contractor. Such notice to the City shall state the date of notification of any such claim, demand, suit, or other action; the names and addresses of the claimant(s); the basis thereof; and the name of each person against whom such claim is being asserted. Such notice shall be delivered personally or by mail and shall be sent to the City and to the Austin City Attorney. Personal delivery to the City Attorney shall be to City Hall, 301 West 2nd Street, 4th Floor, Austin, Texas 78701, and mail delivery shall be to P.O. Box 1088, Austin, Texas 78767.

7.9 **Notices.** Unless otherwise specified, all notices, requests, or other communications required or appropriate to be given under the Contract shall be in writing and shall be deemed delivered three (3) business days after postmarked if sent by U.S. Postal Service Certified or Registered Mail, Return Receipt Requested. Notices delivered by other means shall be deemed delivered upon receipt by the addressee. Routine communications may be made by first class mail, telefax, or other commercially accepted means. Notices to the City and the Contractor shall be addressed as follows:

To the City:

City of Austin, Purchasing Office

ATTN: Tracy Franklin

P O Box 1088

Austin, TX 78767

To the Contractor:

TIBH Industries, Inc.

ATTN: Abby Monk

1011 E. 53rd ½ Street

Austin, TX 78751

7.10 **Confidentiality.** In order to provide the deliverables to the City, Contractor may require access to certain of the City's and/or its licensors' confidential information (including inventions, employee information, trade secrets, confidential know-how, confidential business information, and other information which the City or its licensors consider confidential) (collectively, "Confidential Information"). Contractor acknowledges and agrees that the Confidential Information is the valuable property of the City and/or its licensors and any unauthorized use, disclosure, dissemination, or other release of the Confidential Information will substantially injure the City and/or its licensors. The Contractor (including its employees, subcontractors, agents, or representatives) agrees that it will maintain the Confidential Information in strict confidence and shall not disclose, disseminate, copy, divulge, recreate, or otherwise use the Confidential Information without the prior written consent of the City or in a manner not expressly permitted under this Contract, unless the Confidential Information is required to be disclosed by law or an order of any court or other governmental authority with proper jurisdiction, provided the Contractor promptly notifies the City before disclosing such information so as to permit the City reasonable time to seek an appropriate protective order. The Contractor agrees to use protective measures no less stringent than the Contractor uses within its own business to protect its own most valuable information, which protective measures shall under all circumstances be at least reasonable measures to ensure the continued confidentiality of the Confidential Information.

7.11 **Advertising.** The Contractor shall not advertise or publish, without the City's prior consent, the fact that the City has entered into the Contract, except to the extent required by law.

7.12 **No Contingent Fees.** The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure the Contract upon any agreement or understanding for commission, percentage, brokerage, or contingent fee, excepting bona fide employees of bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the City shall have the right, in addition to any other remedy available, to cancel the Contract without liability and to deduct from any amounts owed to the Contractor, or otherwise recover, the full amount of such commission, percentage, brokerage or contingent fee.

7.13 **Gratuities.** The City may, by written notice to the Contractor, cancel the Contract without liability if it is determined by the City that gratuities were offered or given by the Contractor or any agent or representative of the Contractor to any officer or employee of the City with a view toward securing the Contract or securing favorable treatment with respect to the awarding or amending or the making of any determinations with respect to the performing of such contract. In the event the Contract is canceled by the City pursuant to this provision, the City shall be entitled, in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by the Contractor in providing such gratuities.

7.14 **Prohibition Against Personal Interest in Contracts.** No officer, employee, independent consultant, or elected official of the City who is involved in the development, evaluation, or decision-making process of the performance of any solicitation shall have a financial interest, direct or indirect, in the Contract resulting from that solicitation. Any willful violation of this section shall constitute impropriety in office, and any officer or employee guilty thereof shall be subject to disciplinary action up to and including dismissal. Any violation of this provision, with the knowledge, expressed or implied, of the Contractor shall render the Contract voidable by the City.

7.15 **Independent Contractor.** The Contract shall not be construed as creating an employer/employee relationship, a partnership, or a joint venture. The Contractor's services shall be those of an independent contractor. The Contractor agrees and understands that the Contract does not grant any rights or privileges established for employees of the City.

7.16 **Assignment-Delegation.** The Contract shall be binding upon and enure to the benefit of the City and the Contractor and their respective successors and assigns, provided however, that no right or interest in the Contract shall be assigned and no obligation shall be delegated by the Contractor without the prior written consent of the City. Any attempted assignment or delegation by the Contractor shall be void unless made in conformity with this paragraph. The Contract is not intended to confer rights or benefits on any person, firm or entity not a party hereto; it being the intention of the parties that there be no third party beneficiaries to the Contract.

7.17 **Waiver.** No claim or right arising out of a breach of the Contract can be discharged in whole or in part by a waiver or renunciation of the claim or right unless the waiver or renunciation is supported by consideration and is in writing signed by the aggrieved party. No waiver by either the Contractor or the City of any one or more events of default by the other party shall operate as, or be construed to be, a permanent waiver of any rights or obligations under the Contract, or an express or implied acceptance of any other existing or future default or defaults, whether of a similar or different character.

7.18 **Modifications.** The Contract can be modified or amended only in writing signed by both parties. No pre-printed or similar terms on any Contractor invoice, order or other document shall have any force or effect to change the terms, covenants, and conditions of the Contract.

7.19 **Interpretation.** The Contract is intended by the parties as a final, complete and exclusive statement of the terms of their agreement. No course of prior dealing between the parties or course of performance or usage of the trade shall be relevant to supplement or explain any term used in the Contract. Although the Contract may have been substantially drafted by one party, it is the intent of the parties that all provisions be construed in a manner to be fair to both parties, reading no provisions more strictly against one party or the other. Whenever a term defined by the Uniform Commercial Code, as enacted by the State of Texas, is used in the Contract, the UCC definition shall control, unless otherwise defined in the Contract.

7.20 **Dispute Resolution.**

7.20.1 If a dispute arises out of or relates to the Contract, or the breach thereof, the parties agree to negotiate prior to prosecuting a suit for damages. However, this section does not prohibit the filing of a lawsuit to toll the running of a statute of limitations or to seek injunctive relief. Either party may make a written request for a meeting between representatives of each party within fourteen (14) calendar days after receipt of the request or such later period as agreed by the parties. Each party shall include, at a minimum, one (1) senior level individual with decision-making authority regarding the dispute. The purpose of this and any subsequent meeting is to attempt in good faith to negotiate a resolution of the dispute. If, within thirty (30) calendar days after such meeting, the parties have not succeeded in negotiating a resolution of the dispute, they will proceed directly to mediation as described below. Negotiation may be waived by a written agreement signed by both parties, in which event the parties may proceed directly to mediation as described below.

7.20.2 If the efforts to resolve the dispute through negotiation fail, or the parties waive the negotiation process, the parties may select, within thirty (30) calendar days, a mediator trained in mediation skills to assist with resolution of the dispute. Should they choose this option, the City and the Contractor agree to act in good faith in the selection of the mediator and to give consideration to qualified individuals nominated to act as mediator. Nothing in the Contract prevents the parties from relying on the skills of a person who is trained in the subject matter of the dispute or a contract interpretation expert. If the parties fail to agree on a mediator within thirty (30) calendar days of initiation of the mediation process, the mediator shall be selected by the Travis County Dispute Resolution Center (DRC). The parties agree to participate in mediation in good faith for up to thirty (30) calendar days from the date of the first mediation session. The City and the Contractor will share the mediator's fees equally and the parties will bear their own costs of participation such as fees for any consultants or attorneys they may utilize to represent them or otherwise assist them in the mediation.

7.21 Minority And Women Owned Business Enterprise (MBE/WBE) Procurement Program.

7.21.1 All City procurements are subject to the City's Minority-Owned and Women-Owned Business Enterprise Procurement Program found at Chapters 2-9A, 2-9B, 2-9C and 2-9D of the City Code. The Program provides Minority-Owned and Women-Owned Business Enterprises (MBEs/WBEs) full opportunity to participate in all City contracts.

7.21.2 The City of Austin has determined that no goals are appropriate for this Contract. **Even though no goals have been established for this Contract, the Contractor is required to comply with the City's MBE/WBE Procurement Program, Chapters 2-9A, 2-9B, 2-9C and 2-9D, of the City Code, as applicable, if areas of subcontracting are identified.**

7.21.3 If any service is needed to perform the Contract and the Contractor does not perform the service with its own workforce or if supplies or materials are required and the Contractor does not have the supplies or materials in its inventory, the Contractor shall contact the Department of Small and Minority Business Resources (DSMBR) at (512) 974-7600 to obtain a list of MBE and WBE firms available to perform the service or provide the supplies or materials. The Contractor shall also make a Good Faith Effort to use available MBE and WBE firms. Good Faith Efforts include but are not limited to contacting the listed MBE and WBE firms to solicit their interest in performing on the Contract; using MBE and WBE firms that have shown an interest, meet qualifications, and are competitive in the market; and documenting the results of the contacts.

7.22 **Jurisdiction And Venue.** The Contract is made under and shall be governed by the laws of the State of Texas, including, when applicable, the Uniform Commercial Code as adopted in Texas, V.T.C.A., Bus. & Comm. Code, Chapter 1, excluding any rule or principle that would refer to and apply the substantive law of another state or jurisdiction. All issues arising from this Contract shall be resolved in the courts of Travis County, Texas and the parties agree to submit to the exclusive personal jurisdiction of such courts. The foregoing, however, shall not be construed or interpreted to limit or restrict the right or ability of the City to seek and secure injunctive relief from any competent authority as contemplated herein.

7.23 **Invalidity.** The invalidity, illegality, or unenforceability of any provision of the Contract shall in no way affect the validity or enforceability of any other portion or provision of the Contract. Any void provision shall be deemed severed from the Contract and the balance of the Contract shall be construed and enforced as if the Contract did not contain the particular portion or provision held to be void. The parties further agree to reform the Contract to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this section shall not prevent this entire Contract from being void should a provision which is the essence of the Contract be determined to be void.

7.24 **Holidays.** The following holidays are observed by the City:

<u>Holiday</u>	<u>Date Observed</u>
New Year's Day	January 1
Martin Luther King, Jr.'s Birthday	Third Monday in January

Presidents Day	Third Monday in February
Memorial Day	Last Monday in May
Independence Day	July 4
Labor Day	First Monday in September
Veterans Day	November 11
Thanksgiving Day	Fourth Thursday in November
Friday after Thanksgiving	Friday after Thanksgiving
Christmas Eve	December 24
Christmas Day	December 25

If a Legal Holiday falls on Saturday, it will be observed on the preceding Friday. If a Legal Holiday falls on Sunday, it will be observed on the following Monday.

7.25 Survivability of Obligations. All provisions of the Contract that impose continuing obligations on the parties, including but not limited to the warranty, indemnity, and confidentiality obligations of the parties, shall survive the expiration or termination of the Contract.

7.26 Non-Suspension or Debarment Certification. The City of Austin is prohibited from contracting with or making prime or sub-awards to parties that are suspended or debarred or whose principals are suspended or debarred from Federal, State, or City of Austin Contracts. By accepting a Contract with the City, the Vendor certifies that its firm and its principals are not currently suspended or debarred from doing business with the Federal Government, as indicated by the General Services Administration List of Parties Excluded from Federal Procurement and Non-Procurement Programs, the State of Texas, or the City of Austin.

7.27 Incorporation of Documents. **Section 0100, Standard Purchase Definitions**, is hereby incorporated into this Contract by reference, with the same force and effect as if they were incorporated in full text. The full text versions of this Section are available, on the Internet at the following online address: <http://www.austintexas.gov/sites/default/files/files/Finance/Purchasing/standard-purchase-definitions.pdf>.

In witness whereof, the parties have caused duly authorized representatives to execute this Contract on the dates set forth below.

TIBH INDUSTRIES, INC.

By: Abby Monk
Signature

Name: Abby Monk
Printed Name

Title: Regional Marketing Manager

Date: 9/30/2014

CITY OF AUSTIN

By: Michael Benson
Signature

Name: Michael Benson
Printed Name

Title: Chief Admin Officer

Date: 9/30/2014

EASTER SEALS CENTRAL TEXAS

By: Lucas Wells
Signature

Name: Lucas Wells
Printed Name

Title: Chief Program Officer

Date: 09-24-14

List of Exhibits

Exhibit A	Schedule for Creeks and Channels
Exhibit B	Schedule for Detention and Water Quality Ponds
Exhibit C	Scope of Work
Exhibit D	Environmental Criteria Manual
Exhibit E	Non Discrimination Certification

EXHIBIT A

Creeks - Vegetation Control Program														
Watershed Protection Department														
FY 2014-15														
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut
1.0	N of Whispering Vy, 4800 Whispering Vy to RR Track	67,562	913	WLR	465P	3	C	0.00525	\$ 354.70	\$ 1,064.10	Oct-Mar	Apr-Jun	Jul-Sept	N/A
1.1	East of 11900 Mustang Chase, Mustang Chase to fence gate	25,191	311	WLR	465P	3	C	0.00525	\$ 132.25	\$ 396.76	Oct-Mar	Apr-Jun	Jul-Sept	N/A
1.5	Extension of Flag 1 beyond 4800 blk	93,024	816	WLR	465P	3	C	0.00525	\$ 488.38	\$ 1,465.13	Oct-Mar	Apr-Jun	Jul-Sept	N/A
2.0	North of Cordova, Calle Verde to Welland Circle	85,107	2,579	WLR	465X	3	B	0.019	\$ 1,617.03	\$ 4,851.10	Oct-Mar	Apr-Jun	Jul-Sept	N/A
2.1	North of Arabian Trail, Bell to end of channel	48,640	1,280	WLR	464M	3	C	0.00525	\$ 255.36	\$ 766.08	Oct-Mar	Apr-Jun	Jul-Sept	N/A
2.2	South of Bull Run, West Cow Path to Mustang Chase	119,525	2,250	WLR	465J	3	C	0.00525	\$ 627.51	\$ 1,882.52	Oct-Mar	Apr-Jun	Jul-Sept	N/A
2.3	Mc Neil Dr. south of Melrose to Parmer Lane	176,941	4,159	WLR	435W	3	A4	0.011	\$ 1,946.35	\$ 5,839.05	Oct-Mar	Apr-Jun	Jul-Sept	N/A
2.4	Highway 183 to Parliament House Dr. (Lake Creek)	570,520	4,195	LKC	434E	7	A4	0.011	\$ 6,275.72	\$ 43,930.04	Oct-Nov	March	Monthly	Monthly
2.7	West of Willow Bend, W. Parmer La. to Old Cedar La	127,206	1,719	WLR	466Y	3	C	0.00525	\$ 667.83	\$ 2,003.49	Oct-Mar	Apr-Jun	Jul-Sept	N/A
3.0	E of Branston, Atterbury La. - N to Little Fatima La	114,464	1,568	WLR	497K	3	B	0.019	\$ 2,174.82	\$ 6,524.45	Oct-Mar	Apr-Jun	Jul-Sept	N/A
4.0	N of Peggoty, Peggoty north to end of channel (COA)	23,983	827	WLR	497J	3	C	0.00525	\$ 125.91	\$ 377.73	Oct-Mar	Apr-Jun	Jul-Sept	N/A
5.0	W of Blossom Bell, Braker Lane W. - S to Kramer Ln.	31,215	848	LWA	496J	3	C	0.00525	\$ 163.88	\$ 491.64	Oct-Mar	Apr-Jun	Jul-Sept	N/A
6.0	South of Denton, Metric Blvd to RR Tracks	108,608	1,697	LWA	495M	3	B	0.019	\$ 2,063.55	\$ 6,190.66	Oct-Mar	Apr-Jun	Jul-Sept	N/A
7.0	South of 1700 Bik Kramer Lane, Kramer - south to Mearns Meadow	93,576	3,342	LWA	496N	3	B	0.019	\$ 1,777.94	\$ 5,333.83	Oct-Mar	Apr-Jun	Jul-Sept	N/A
8.0	West of Berthound, S. Meadows - N to channel end	15,008	469	LWA	496SN	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
9.0	North of S. Meadows, Parkfield to Parkfield	71,760	1,840	LWA	496NPS	3	A1	0.021	\$ 1,506.96	\$ 4,520.88	Oct-Mar	Apr-Jun	Jul-Sept	N/A
9.1	East of Newmont, Kramer to Sagebrush	77,220	2,340	LWA	496PT	3	B	0.019	\$ 1,467.18	\$ 4,401.54	Oct-Mar	Apr-Jun	Jul-Sept	N/A
10.0	East of Golden Quail, Cripple Creek to S. Meadows	36,575	665	LWA	496SN	3	B	0.019	\$ 694.93	\$ 2,084.78	Oct-Mar	Apr-Jun	Jul-Sept	N/A
11.0	West of 1300-1800 Mearns Meadow, Parkfield to Golden Meadow	296,800	4,240	LWA	495, 496RNS	3	B	0.019	\$ 5,639.20	\$ 16,917.60	Oct-Mar	Apr-Jun	Jul-Sept	N/A
12.0	W of Neans, Golden Quail to Mearns Meadow	45,325	925	LWA	496S	3	B	0.019	\$ 861.18	\$ 2,583.53	Oct-Mar	Apr-Jun	Jul-Sept	N/A
13.0	E of Ray Avenue, Neans to end of Cripple Creek	27,160	970	LWA	496X	3	C	0.00525	\$ 142.59	\$ 427.77	Oct-Mar	Apr-Jun	Jul-Sept	N/A
13.1	West of Brownie, Applegate south to Pond #28	150,215	1,820	LWA	496Y	3	B	0.019	\$ 2,854.09	\$ 8,562.26	Oct-Mar	Apr-Jun	Jul-Sept	N/A
14.0	Rutland to Mearns Meadow	10,032	152	LWA	496W	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
14.1	Creek located behind 1124 Rutland Dr. from pond N to Parkfield	35,912	1,980	LWA	496W	3	B	0.019	\$ 682.33	\$ 2,046.98	Oct-Mar	Apr-Jun	Jul-Sept	N/A
14.2	Rutland to Rundberg (behind HEB)	120,439	656	LWA	496W	3	C	0.00525	\$ 632.30	\$ 1,896.91	Oct-Mar	Apr-Jun	Jul-Sept	N/A
16.0	East of Briardale, Colony Creek to Briardale	21,784	778	LWA	525D	3	C	0.00525	\$ 114.37	\$ 343.10	Oct-Mar	Apr-Jun	Jul-Sept	N/A

Creeks - Vegetation Control Program														
Watershed Protection Department														
FY 2014-15														
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut
17.0	N of Peyton Gin Rd, between Pointer Lane & Briardale	31,540	830	LWA	525D	3	C	0.00525	\$ 165.59	\$ 496.76	Oct-Mar	Apr-Jun	Jul-Sept	N/A
18.0	E of 8600 to 8800 Brookfield, Fairfield to Peyton Gin	24,270	809	LWA	525DH	3	C	0.00525	\$ 127.42	\$ 382.25	Oct-Mar	Apr-Jun	Jul-Sept	N/A
18.1	S of 900 W. Rundberg, Rundberg to Peyton Gin	253,240	2,435	LWA	526AE	3	C	0.00525	\$ 1,329.51	\$ 3,988.53	Oct-Mar	Apr-Jun	Jul-Sept	N/A
19.0	W of 8800 to 8900 Slayton, Carpenter to Schirra	26,635	761	LWA	526EF	3	C	0.00525	\$ 139.83	\$ 419.50	Oct-Mar	Apr-Jun	Jul-Sept	N/A
19.1	Rundberg (by Texaco Car Wash and Pawn Shop)	13,156	286	LWA	526F	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
19.2	North Creek	42,368	1,324	LWA	526B	3	C	0.00525	\$ 222.43	\$ 667.30	Oct-Mar	Apr-Jun	Jul-Sept	N/A
20.0	W of Crown Ridge Rd, Northcape to E. Rundberg La	46,509	1,257	LWA	526G	3	C	0.00525	\$ 244.17	\$ 732.52	Oct-Mar	Apr-Jun	Jul-Sept	N/A
20.1	North of N. Plaza to Fiskville Cemetery	41,384	739	LWA	526L	3	C	0.00525	\$ 217.27	\$ 651.80	Oct-Mar	Apr-Jun	Jul-Sept	N/A
21.0	E of Aberdeen Way, (E. Rundberg to Childress)	90,288	2,508	LWA	526HLM	3	A1	0.021	\$ 1,896.05	\$ 5,688.14	Oct-Mar	Apr-Jun	Jul-Sept	N/A
21.1	East of Hathaway (Ohlen to Doris)	16,434	498	SHL	525C	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
22.0	East of Bridgeport, Peyton Gin to Thurmond	166,750	2,875	LWA	526EF	3	C	0.00525	\$ 875.44	\$ 2,626.31	Oct-Mar	Apr-Jun	Jul-Sept	N/A
25.0	South of 8409/8431 Jamestown, Bangor Rd. to end of channel	29,865	905	LWA	525M	3	A1	0.021	\$ 627.17	\$ 1,881.50	Oct-Mar	Apr-Jun	Jul-Sept	N/A
26.0	Channel between 512-514 and 513-515 San Jose	4,746	226	LWA	526J	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
27.0	S of Park Plaza, IH 35 N. to Fumess	278,356	2,626	LWA	526P	3	C	0.00525	\$ 1,461.37	\$ 4,384.11	Oct-Mar	Apr-Jun	Jul-Sept	N/A
28.0	Pompton Drive to 8000 Camden Drive	19,282	622	SHL	525G	3	B	0.019	\$ 366.36	\$ 1,099.07	Oct-Mar	Apr-Jun	Jul-Sept	N/A
28.1	Shoal Creek from Foster Ln to Research Blvd	478,333	7,029	SHL	525B, 495TX	3	A4	0.011	\$ 5,261.66	\$ 15,784.99	Oct-Mar	Apr-Jun	Jul-Sept	N/A
28.2	N. Anderson Ln. at Ashdale to Burnet Rd.	68,191	1,843	SHL	525F	4	A4	0.011	\$ 750.10	\$ 3,000.40	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
28.3	North of Stonediff, Hart Ln. to Greystone	100,949	1,711	SHL	524D	3	B	0.019	\$ 1,918.03	\$ 5,754.09	Oct-Mar	Apr-Jun	Jul-Sept	N/A
29.0	North of Belford, Bon-Air to Camden	46,799	1,709	SHL	525G	3	A1	0.021	\$ 982.78	\$ 2,948.34	Oct-Mar	Apr-Jun	Jul-Sept	N/A
29.2	S of Chartwood Dr, Rockwood Dr. to Steck Av	35,100	780	SHL	525B	3	B	0.019	\$ 666.90	\$ 2,000.70	Oct-Mar	Apr-Jun	Jul-Sept	N/A
29.3	Rockwood/8214 Briarwood to 8502 Stillwood	55,062	1,311	SHL	525B	3	A2	0.050	\$ 2,753.10	\$ 8,259.30	Oct-Mar	Apr-Jun	Jul-Sept	N/A
30.0	S of Northcross, Burnet Rd to Silverway	44,394	1,057	SHL	525K	3	A1	0.021	\$ 932.27	\$ 2,796.82	Oct-Mar	Apr-Jun	Jul-Sept	N/A
30.1	On Arroyo Seco from Koenig to Heckla Terrace	38,328	2,003	SHL	555B	5	A1*	0.032	\$ 1,226.50	\$ 6,132.48	Late Oct	Early Dec	Early Apr	Late May
30.2	On Goodnight from Karen to Arroyo Seco	37,706	1,109	SHL	525bx	5	A1*	0.032	\$ 1,206.59	\$ 6,032.96	Late Oct	Early Dec	Early Apr	Late May
31.0	W of Isabelle, Airport to Croslin	155,788	2,686	WLR	525Z	4	B	0.019	\$ 2,959.97	\$ 11,839.89	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
31.1	W of Bull Creek Rd, 150 ft. N of White Horse Trail then south to 5905 Nasco	41,475	1,659	SHL	525WS	3	C	0.00525	\$ 217.74	\$ 653.23	Oct-Mar	Apr-Jun	Jul-Sept	N/A
31.2	E of 5900-6800 Grover Ave, to Koenig Ln.	73,850	2,954	SHL	525Y	3	C	0.00525	\$ 387.71	\$ 1,163.14	Oct-Mar	Apr-Jun	Jul-Sept	N/A

Creeks - Vegetation Control Program														
Watershed Protection Department														
FY 2014-15														
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut
32.0	E of Grover from Justin to Ruth	18,537	501	SHL	525U	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
32.3	W of Highland Ct, to end of channel (COA Property)	16,000	640	TYN	524Z	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
33.0	E of 6200 to 6500 Chesterfield, W. Denson to RR	88,270	1,358	WLR	555D	4	B	0.019	\$ 1,677.13	\$ 6,708.52	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
33.1	From 6900 Shoal Creek Blvd. to Foster Lane (RFA) and 2-Silverway Lots	363,312	4,176	SHL	525F	3	C	0.00525	\$ 1,907.39	\$ 5,722.16	Oct-Mar	Apr-Jun	Jul-Sept	N/A
34.1	E of Crestmont, Hancock Dr. to 49th	11,106	1,733	SHL	555E	1	A1	0.021	\$ 233.23	\$ 233.23	N/A	N/A	N/A	N/A
35.0	N of 1500 bik Briarcliff, Briarcliff, Briarcliff - N to Wheless	48,247	6,869	FOR	556K	3	B	0.019	\$ 916.69	\$ 2,750.08	Oct-Mar	Apr-Jun	Jul-Sept	N/A
35.1	S of Wheatley Ave. Bennett to Footbridge S of Providence	82,796	1,687	BMK	526X	3	A1	0.021	\$ 1,738.72	\$ 5,216.15	Oct-Mar	Apr-Jun	Jul-Sept	N/A
35.2	1037 Reinli - south to parking lot	19,110	455	TAN	556J	3	B	0.019	\$ 363.09	\$ 1,089.27	Oct-Mar	Apr-Jun	Jul-Sept	N/A
37.0	N of 900 bik E. 55th, I.H. 35 to Airport Blvd.	108,898	1,844	TAN	555M	4	A1	0.021	\$ 2,286.86	\$ 9,147.43	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
37.1	N of 1100 bik E. 52nd, Cameron to end of 53rd St.	145,860	2,210	TAN	556N	4	A1	0.021	\$ 3,063.06	\$ 12,252.24	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
38.0	W of 5700 to 6100 Thames, Wheless to Wellington	49,561	1,437	FOR	556P	4	A1	0.021	\$ 1,040.78	\$ 4,163.12	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
39.0	W of Blanton, Rogge to Greenbrook	11,266	614	FOR	556T	3	B	0.019	\$ 214.05	\$ 642.16	Oct-Mar	Apr-Jun	Jul-Sept	N/A
39.1	E of 6909 to 7305 Johnny Morris, J. Morris to J. Morris	77,903	2,513	WLR	557U	3	A1	0.021	\$ 1,635.96	\$ 4,907.89	Oct-Mar	Apr-Jun	Jul-Sept	N/A
40.0	West of Delwood, Rogge to Berkman	66,599	1,637	FOR	558P	4	B	0.019	\$ 1,265.38	\$ 5,061.52	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
40.1	South of 1500 Briarcliff, Briarcliff to Berkman	43,688	1,234	FOR	556P	4	B	0.019	\$ 830.07	\$ 3,320.29	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
40.2	Parkwood Road at Airport Boulevard - COA Property	28,969	491	TAN	555Z	5	C	0.00525	\$ 152.09	\$ 760.44	Oct	Late Feb	Apr	Early Jun
41.0	S of Wellington at Thames, 2300 Rogge to Wellington	22,860	749	FOR	556U	4	C	0.00525	\$ 120.02	\$ 480.06	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
42.0	W of Gloucester, Rogge to Norwood Hill	70,598	1,790	FOR	556UY	4	A1	0.021	\$ 1,482.56	\$ 5,930.23	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
43.0	E of Westminster from Rogge to Manor	17,702	700	FOR	556UY	4	B	0.019	\$ 336.34	\$ 1,345.35	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
44.0	W of 5100 to 5300 Overbrook, E. 51st to Manor Rd.	41,701	1,177	FOR	556Y	4	B	0.019	\$ 792.32	\$ 3,169.28	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
45.0	N of Tipton, Woodbriar to S of Norwood Hill	66,038	3,599	FOR	556Y	4	A1	0.021	\$ 1,386.80	\$ 5,547.19	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
45.1	ROW on N Side of E 51st St from Pecan Springs Rd. to Highbury	51,204	1,896	FOR	556Y	4	A2	0.050	\$ 2,560.20	\$ 10,240.80	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
46.0	S of 2900 Bik E. 51st to 4700 bik Blueberry	76,122	1,737	FOR	556Y	4	A2	0.050	\$ 3,806.10	\$ 15,224.40	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
46.1	N of Moss Dr., Airport to Roundtree	16,554	534	BOG	586E	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
47.0	S of 6000 to 6200 Parliament, one lot east of Regency to 100 ft. west of King Charles	40,702	866	WLR	587E	3	C	0.00525	\$ 213.69	\$ 641.06	Oct-Mar	Apr-Jun	Jul-Sept	N/A
48.0	E of Craigwood, E. MLK Blvd to end of Craigwood	95,364	1,766	WLR	587J	4	A1	0.021	\$ 2,002.64	\$ 8,010.58	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
49.0	S of Elmsgrove, Stonegate to one Lot past Woodmoor	8,165	492	FOR	586M	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept

Creeks - Vegetation Control Program														
Watershed Protection Department														
FY 2014-15														
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut
50.1	W of Pershing Dr. Denver Ave to MLK Blvd.	38,036	514	TAN	586EJ	3	B	0.019	\$ 722.68	\$ 2,168.05	Oct-Mar	Apr-Jun	Jul-Sept	N/A
51.1	N of Maple Ave. from 13th to 16th Street	29,478	578	BOG	585R	6	B	0.019	\$ 560.08	\$ 3,360.49	N/A	N/A	N/A	N/A
52.0	W of Fiesta, Govalle Ave to Lyons Rd	97,966	1,342	BOG	586W	4	B	0.019	\$ 1,861.35	\$ 7,445.42	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
52.3	Boggy Creek, Stuart Cir. to Ed Bluestein	542,748	4,492	BOG	586XYZ	4	C	0.00525	\$ 2,849.43	\$ 11,397.71	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Oct
53.0	N of Vilita Avenida, Vasquez E to end of channel	40,698	714	CAR	616X	4	B	0.019	\$ 773.26	\$ 3,093.05	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
54.0	E of Lawrence, end of Cimarron - N to end of channel	70,172	1,324	CAR	616X	4	A1	0.021	\$ 1,473.61	\$ 5,894.45	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
54.1	W of Vargas, from Riverside to Pond	50,004	926	CAR	616W	3	C	0.00525	\$ 262.52	\$ 787.56	Oct-Mar	Apr-Jun	Jul-Sept	N/A
54.2	N of Riverside Dr, Wickersham - south under both lanes of E. Riverside Dr.	76,857	411	CCE	615UY	3	C	0.00525	\$ 403.50	\$ 1,210.50	Oct-Mar	Apr-Jun	Jul-Sept	N/A
55.0	S. of Cruz, Vargas to Lawrence	42,756	1,018	CAR	616X	4	B	0.019	\$ 812.36	\$ 3,249.46	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
55.1	N of 6100 Block Fairway, Fairway to Marigold	22,950	675	CCE	616W	3	C	0.00525	\$ 120.49	\$ 361.46	Oct-Mar	Apr-Jun	Jul-Sept	N/A
58.0	W of Packsaddle Pass, Ben White to Western Trails	15,938	613	WMS	613Z	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
58.1	Barton Parkway, Arpdale to Wilke	59,532	1,353	BAR	614E	4	C	0.00525	\$ 312.54	\$ 1,250.17	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
59.0	E of 3400 blk Willowrun, Woodward to Alpine Rd (RSMP)	55,510	910	BLU	614Z	3	B	0.019	\$ 1,054.69	\$ 3,164.07	Oct-Mar	Apr-Jun	Jul-Sept	N/A
60.0	E of 4800 Westgate Blvd, 4800 Westgate to Williamson Creek	52,955	1,513	WMS	613Z	3	B	0.019	\$ 1,006.15	\$ 3,018.44	Oct-Mar	Apr-Jun	Jul-Sept	N/A
61.0	S of Whispering Creek, State Hwy 71 - W to Oak Meadow	149,532	1,466	WMS	611V	3	B	0.019	\$ 2,841.11	\$ 8,523.32	Oct-Mar	Apr-Jun	Jul-Sept	N/A
61.1	W of Silvermine, Scenic Brook to 8209 Spring Valley	80,148	2,059	WMS	611Q	3	B	0.019	\$ 1,522.81	\$ 4,568.44	Oct-Mar	Apr-Jun	Jul-Sept	N/A
61.2	Oak Meadow Extension	20,177	544	WMS	611UV	3	B	0.019	\$ 383.36	\$ 1,150.09	Oct-Mar	Apr-Jun	Jul-Sept	N/A
62.0	N of Ektom, Westgate Blvd to Jones Road	90,496	1,414	WMS	643C	3	B	0.019	\$ 1,719.42	\$ 5,158.27	Oct-Mar	Apr-Jun	Jul-Sept	N/A
63.0	W of Richmond, Redd, S to RR Tracks	53,788	1,921	WMS	644AE	4	A1	0.021	\$ 1,129.55	\$ 4,518.19	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
64.0	W of 5500 Westgate Blvd, Williamson Crk - S to Amur	105,508	2,029	WMS	643G	3	B	0.019	\$ 2,004.65	\$ 6,013.96	Oct-Mar	Apr-Jun	Jul-Sept	N/A
65.0	E of Cork Path, W. Stassney to Fair Oaks	61,597	1,987	WMS	643H	3	B	0.019	\$ 1,170.34	\$ 3,511.03	Oct-Mar	Apr-Jun	Jul-Sept	N/A
68.0	N. of 4900 Convict Hill Rd, Convict Hill Rd to Cornelia	176,732	1,921	WMS	642CG	4	A1	0.021	\$ 3,711.37	\$ 14,845.49	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
68.1	N of Summerset Trail, end of Brush Country, W to Hill Forest	31,834	960	WMS	612Y	3	C	0.00525	\$ 167.13	\$ 501.39	Oct-Mar	Apr-Jun	Jul-Sept	N/A
69.0	W of Brush Country Rd, Convict Hill to One Oak Rd	60,711	1,239	WMS	642G	4	B	0.019	\$ 1,153.51	\$ 4,614.04	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
69.1	E of Rutherglen Dr, Naim to Edgemoor (Maple Run)	35,532	756	WMS	642K	4	N/A	0.00251	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
70.0	6108 Oakclaire	9,180	612	BAR	612P	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A

Creeks - Vegetation Control Program														
Watershed Protection Department														
FY 2014-15														
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut
71.0	W of S. 1st, 700 W. Stassney to Williamson Creek	50,358	1,199	WMS	644J	3	C	0.00525	\$ 264.38	\$ 793.14	Oct-Mar	Apr-Jun	Jul-Sept	N/A
73.0	E of Old Castle Rd, Sheraton Ave - S to Battle Bend	136,430	3,898	WMS	644LQ	3	B	0.019	\$ 2,592.17	\$ 7,776.51	Oct-Mar	Apr-Jun	Jul-Sept	N/A
74.0	W of Boxcar Run, Boxcar Run to end of Sahara	45,630	1,014	WMS	643R	3	A1	0.021	\$ 958.23	\$ 2,874.69	Oct-Mar	Apr-Jun	Jul-Sept	N/A
75.0	N of 6200 Boxcar Run, Woodhue to Boxcar Run	24,690	823	WMS	643R	3	B	0.019	\$ 469.11	\$ 1,407.33	Oct-Mar	Apr-Jun	Jul-Sept	N/A
76.0	E of Pennwood, Stanley - N to end of channel	27,166	578	WMS	643R	3	C	0.00525	\$ 142.62	\$ 427.86	Oct-Mar	Apr-Jun	Jul-Sept	N/A
76.1	E of Railroad, W. Wm Cannon - N to Stanley	110,308	2,398	WMS	643RV	3	B	0.019	\$ 2,095.85	\$ 6,287.56	Oct-Mar	Apr-Jun	Jul-Sept	N/A
77.0	King Edward to Eberhart to S. 1st; past Stassney to S. Congress	253,629	6,578	WMS	644N	3	A1	0.021	\$ 5,326.21	\$ 15,978.63	Oct-Mar	Apr-Jun	Jul-Sept	N/A
78.0	W of Peppertree Pkwy, Ten Rd - south to channel intersection	173,376	3,612	WMS	644V	3	B	0.019	\$ 3,294.14	\$ 9,882.43	Oct-Mar	Apr-Jun	Jul-Sept	N/A
79.0	N for 500 ft. & then S of 2200 Ten Rd to intersection of channel	138,958	7,331	WMS	644VZ	3	A2	0.050	\$ 6,947.90	\$ 20,843.70	Oct-Mar	Apr-Jun	Jul-Sept	N/A
82.0	W of Acom Cove, E. Stassney Lane to channel	11,795	337	WMS	645X	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
83.0	From Copperas and Copano, East to end of Creek	31,317	949	WMS	642L	3	B	0.019	\$ 595.02	\$ 1,785.07	Oct-Mar	Apr-Jun	Jul-Sept	N/A
84.0	N of Kalama, San Simeon to Copano	25,200	450	WMS	642Q	3	C	0.00525	\$ 132.30	\$ 396.90	Oct-Mar	Apr-Jun	Jul-Sept	N/A
84.1	E of Muskdeer, Copano to Latta (Maple Run)	34,730	755	WMS	642P	4	N/A	0.00251	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
84.2	E of Moose, Copano to Latta (Maple Run)	63,784	938	WMS	642PQ	4	N/A	0.00251	\$ 160.10	\$ 640.39	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
85.0	Clarno at islander, S to Manzanillo	34,386	1,042	WMS	642L	3	B	0.019	\$ 653.33	\$ 1,960.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
86.0	4110 Stonecroft Dr.	7,550	370	WMS	642M	5	C	0.00525	\$ 100.00	\$ 500.00	Nov	March	April	May
87.0	W of Brodie, Alexandria to Williamson Creek	147,780	3,284	WMS	642RW	3	A1	0.021	\$ 3,103.38	\$ 9,310.14	Oct-Mar	Apr-Jun	Jul-Sept	N/A
88.0	West of Clydesdale, N. from Burnside to 250 ft north of Clarksburg including lot at 3300 Blumie	96,866	1,871	WMS	643NS	3	C	0.021	\$ 2,034.19	\$ 6,102.56	Oct-Mar	Apr-Jun	Jul-Sept	N/A
89.0	E of Treehouse, Alexandria - N to Williamson Creek	147,794	3,817	WMS	642QR	3	A1	0.021	\$ 3,103.67	\$ 9,311.02	Oct-Mar	Apr-Jun	Jul-Sept	N/A
91.0	S of Alta Loma, Galapagos to Copano	48,168	892	WMS	642Q	3	B	0.019	\$ 915.19	\$ 2,745.58	Oct-Mar	Apr-Jun	Jul-Sept	N/A
92.0	S of Eskew, Maui to Cattle Drive	29,196	811	WMS	642Q	3	B	0.019	\$ 554.72	\$ 1,664.17	Oct-Mar	Apr-Jun	Jul-Sept	N/A
93.0	E of Westgate Blvd, Amur, S to Hidden Oaks	160,776	3,828	WMS	643KP	3	A1	0.021	\$ 3,376.30	\$ 10,128.89	Oct-Mar	Apr-Jun	Jul-Sept	N/A
93.1	6700 Westgate, south of Aldford	10,540	310	WMS	643KP	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
94.0	E of Swindon, Brisbane to Market Garden	34,669	937	SBG	643TX	3	B	0.019	\$ 658.71	\$ 1,976.13	Oct-Mar	Apr-Jun	Jul-Sept	N/A
94.1	N of Lear, Manchaca Rd to end of S.S. pipe	58,770	1,306	WMS	643UY	3	B	0.019	\$ 1,116.63	\$ 3,349.89	Oct-Mar	Apr-Jun	Jul-Sept	N/A
95.0	E of Finch Trail, Westgate to Market Garden	38,556	918	WMS	643S	3	C	0.00525	\$ 202.42	\$ 607.26	Oct-Mar	Apr-Jun	Jul-Sept	N/A
95.1	Behind 9009 Comberg along the S of Comburg Castle Way to Collingwood Dr.	34,872	1,453	SLA	673E	3	B	0.019	\$ 662.57	\$ 1,987.70	Oct-Mar	Apr-Jun	Jul-Sept	N/A
96.0	S of Willet, from Westgate to Appomattox	126,048	3,256	SBG	643WX	3	A1	0.021	\$ 2,647.01	\$ 7,941.02	Oct-Mar	Apr-Jun	Jul-Sept	N/A

Creeks - Vegetation Control Program Watershed Protection Department FY 2014-15														
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97.0	W of Dixon, Gettysburg to Cameron Loop	73,800	1,476	SBG	643WX	3	B	0.019	\$ 1,402.20	\$ 4,206.60	Oct-Mar	Apr-Jun	Jul-Sept	N/A
97.2	N of 2800 Crownspoint to Firecrest	17,272	508	SLA	672H	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
97.3	S of Silcantu, E & W of Biltbrook to detention pond	66,576	876	SLA	673X	3	B	0.019	\$ 1,264.94	\$ 3,794.83	Oct-Mar	Apr-Jun	Jul-Sept	N/A
98.0	S. of Quicksilver, E. to 7300 Meadow Lake	62,622	1,278	ONI	674R	3	A1	0.021	\$ 1,315.06	\$ 3,945.19	Oct-Mar	Apr-Jun	Jul-Sept	N/A
99.0	Channel E. of Castlekeep Way, S. for 300 ft.	6,363	303	SBG	644W	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
102.0	N of 4600 Hammermill Run, to Palo Blanco Lane	23,867	823	WMS	675A	3	C	0.00525	\$ 125.30	\$ 375.91	Oct-Mar	Apr-Jun	Jul-Sept	N/A
103.0	W of Turnstone, Dovemeadow to Williamson Creek	50,076	1,391	WMS	674D	4	A1	0.021	\$ 1,051.60	\$ 4,206.38	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
105.0	S Congress to 1st to Teaberry Circle	226,005	3,965	SBG	674AE	3	A1	0.021	\$ 4,746.11	\$ 14,238.32	Oct-Mar	Apr-Jun	Jul-Sept	N/A
108.0	N of Blue Valley, 800 Bik Dittmar - E to Dittmar	172,928	1,544	SBG	673H	3	B	0.019	\$ 3,285.63	\$ 9,856.90	Oct-Mar	Apr-Jun	Jul-Sept	N/A
111.0	W of WLRes, Dulwich - N to end of channel	29,674	802	SBG	673H	3	B	0.019	\$ 563.81	\$ 1,691.42	Oct-Mar	Apr-Jun	Jul-Sept	N/A
113.0	N of Borage, 4700 Borage - E to Canella	49,630	1,418	ONI	674M	3	B	0.019	\$ 942.97	\$ 2,828.91	Oct-Mar	Apr-Jun	Jul-Sept	N/A
114.1	SW of Lake Charles, Dixie to Asa Dr.	51,920	1,298	ONI	675NS	3	B	0.019	\$ 986.48	\$ 2,959.44	Oct-Mar	Apr-Jun	Jul-Sept	N/A
116.0	E of Button Bush, Savorey to Canella	23,577	813	ONI	674R	3	B	0.019	\$ 447.96	\$ 1,343.89	Oct-Mar	Apr-Jun	Jul-Sept	N/A
118.0	6718 Silvermine W. to end of condos	47,564	517	WMS	611Q	3	B	0.019	\$ 903.72	\$ 2,711.15	Oct-Mar	Apr-Jun	Jul-Sept	N/A
119.0	Denver Avenue (COA Lot)	13,692	163	TAN	586E	3	A1	0.021	\$ 287.53	\$ 862.60	Oct-Mar	Apr-Jun	Jul-Sept	N/A
120.0	E. of Kayview, Abilene to Kayview (RSMP)	45,504	1,264	WMS	642E	3	A1	0.021	\$ 955.58	\$ 2,866.75	Oct-Mar	Apr-Jun	Jul-Sept	N/A
126.0	7229 Southbrook Dr to 7131 Scenic Brook Drive	152,976	3,187	WMS	611UV	3	B	0.019	\$ 2,906.54	\$ 8,719.63	Oct-Mar	Apr-Jun	Jul-Sept	N/A
128.0	W of E.M. Franklin Ave, E. 12th St. to Cemetery	45,258	1,191	TAN	586P	3	B	0.019	\$ 859.90	\$ 2,579.71	Oct-Mar	Apr-Jun	Jul-Sept	N/A
129.0	7500 Bennett Ave. to confluence with Buttermilk Creek	18,236	388	BMK	526X	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
130.0	E of Greenbrook, Blanton to Westminster (New area, E)	30,888	702	FOR	556T	3	C	0.00525	\$ 162.16	\$ 486.49	Oct-Mar	Apr-Jun	Jul-Sept	N/A
133.0	9100 IH 35 North (LWA - upstream)	32,264	872	LWA	526F	3	C	0.00525	\$ 169.39	\$ 508.16	Oct-Mar	Apr-Jun	Jul-Sept	N/A
137.0	100 E. 45th to 100 E. 46th	30,459	781	WLR	555Q	3	B	0.019	\$ 578.72	\$ 1,736.16	Oct-Mar	Apr-Jun	Jul-Sept	N/A
138.0	9100 IH 35 North (LWA - downstream)	49,544	1,126	LWA	526GL	3	C	0.00525	\$ 260.11	\$ 780.32	Oct-Mar	Apr-Jun	Jul-Sept	N/A
141.0	S of 1400 Fort Branch Blvd. (only the overbank areas less a creek buffer) & 1226 & 1224 Fort Branch Blvd.	16,893	1,686	FOR	586Q	3	B	0.019	\$ 320.97	\$ 962.90	Oct-Mar	Apr-Jun	Jul-Sept	N/A
146.0	Lots - 5341 Westminster Drive and 5334 Wellington across channel	17,339	123	FOR	556UY	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
149.0	Shoal Creek from 38th St. to 4100 Jefferson	364,072	2,677	SHL	555NS	3	B	0.019	\$ 6,917.37	\$ 20,752.10	Oct-Mar	Apr-Jun	Jul-Sept	N/A
153.0	2600 E. Oltorf (CNT- downstream)	76,032	1,728	CCW	615Y	3	A4	0.011	\$ 836.35	\$ 2,509.06	Oct-Mar	Apr-Jun	Jul-Sept	N/A
155.0	300 E. 51st to 4500 Ave D (WLRier)	94,545	2,101	WLR	555LQ	3	C	0.00525	\$ 496.36	\$ 1,489.08	Oct-Mar	Apr-Jun	Jul-Sept	N/A
156.0	5200 Berkman to 1418 Broadmoor Dr	149,184	1,332	TAN	556S	3	C	0.00525	\$ 783.22	\$ 2,349.65	Oct-Mar	Apr-Jun	Jul-Sept	N/A

Creeks - Vegetation Control Program														
Watershed Protection Department														
FY 2014-15														
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut
165.0	E of Dandelion Trl, Piney Creek Bend, S to end of channel behind 8803 Dandelion Trail (Cherry Creek)	36,476	829	SBG	642Z	4	C	0.00525	\$ 191.50	\$ 766.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
166.0	8618 Piney Creek Bend, south to 8804 Dandelion Trail (Cherry Creek)	33,300	740	SBG	642Z	4	C	0.00525	\$ 174.83	\$ 699.30	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
167.0	2801 Cameron Loop, S to end of trailer prk (Cherry Crk)	40,293	1,089	SBG	643WX	4	C	0.00525	\$ 211.54	\$ 846.15	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
169.0	Behind 9606 Tea Rose to 9606 Kangaroo (Cherry Creek)	8,603	528	SLA	672CG	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
170.0	9304 Silk Oak Cove to Silk Oak Drive (Cherry Creek)	9,568	368	SLA	672CD	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
171.0	9312 Tea Rose to 9300 Lightwood Lp (Cherry Creek)	8,160	340	SLA	672D	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
172.0	Behind 9400-9604 Tea Rose (Cherry Creek)	22,563	981	SLA	672CD	4	C	0.00525	\$ 118.46	\$ 473.82	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
181.0	30 Margranita Crescent and lots on each end of channel	40,244	1,150	JOH	554Z	3	C	0.00525	\$ 211.28	\$ 633.84	Oct-Mar	Apr-Jun	Jul-Sept	N/A
182.0	Dewilly Center	27,368	622	BOG	585V	3	A1	0.021	\$ 574.73	\$ 1,724.18	Oct-Mar	Apr-Jun	Jul-Sept	N/A
184.0	E of Wagon Crossing Path, E. Stassney to Pino La	82,584	2,232	WMS	644Z	4	A2	0.050	\$ 4,129.20	\$ 16,516.80	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
186.0	1411 Redondo to Webberville	8,095	416	FOR	586L	3	A1	0.021	\$ 170.00	\$ 509.99	Oct-Mar	Apr-Jun	Jul-Sept	N/A
187.0	Watchful Fox at Fairchild	7,910	226	SLA	703B	3	A1	0.021	\$ 166.11	\$ 498.33	Oct-Mar	Apr-Jun	Jul-Sept	N/A
189.0	Teri Rd from Nuckols Crossing to Copperbend	36,480	912	WMS	645WX	4	A1	0.021	\$ 766.08	\$ 3,064.32	N/A	N/A	N/A	
190.0	N. of Colony Creek, Northgate to Collinfield	503,182	4,982	LWA	495Z 525D 526A	3	A1	0.021	\$ 10,566.82	\$ 31,700.47	Oct-Mar	Apr-Jun	Jul-Sept	N/A
191.0	1311 Meadgreen Drive	15,972	484	LWA	496NP	3	A2	0.050	\$ 798.60	\$ 2,395.80	Oct-Mar	Apr-Jun	Jul-Sept	N/A
192.0	2610 Metcalfe Rd	53,824	841	CCW	615X	3	A1	0.021	\$ 1,130.30	\$ 3,390.91	Oct-Mar	Apr-Jun	Jul-Sept	N/A
194.0	Bennett Ave & Wheatley (COA Prop - vacant lot)	24,772	315	BMK	526W	3	A2	0.050	\$ 1,238.60	\$ 3,715.80	Oct-Mar	Apr-Jun	Jul-Sept	
196.0	Faro Drive (Drainage Ditch From Pond)	21,090	703	CCE	615V	4	B	0.019	\$ 400.71	\$ 1,602.84	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
198.0	Dagon Drive (Harris Branch)	27,982	823	GIL	528P	3	C	0.00525	\$ 146.91	\$ 440.72	Oct-Mar	Apr-Jun	Jul-Sept	N/A
200.0	Spicewood Parkway, south of Bart Hollow	35,840	320	BUL	433Z	3	A2	0.050	\$ 1,792.00	\$ 5,376.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
203.0	N of E. St. Elmo at S. Congress Ave - borrow ditch	9,828	378	WMS	644G	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
204.0	N of Brassiewood, Softwood, E to detention pond	19,275	771	WMS	675E	3	B	0.019	\$ 366.23	\$ 1,098.68	Oct-Mar	Apr-Jun	Jul-Sept	N/A
206.0	North of Staton Drive from Billiem Dr. to Metric Blvd.	182,635	1,565	WLR	466L	3	A4	0.011	\$ 2,008.99	\$ 6,026.96	Oct-Mar	Apr-Jun	Jul-Sept	N/A
207.0	Cologne Lane, east of Cabana	105,600	2,400	WLR	465LR	4	B	0.019	\$ 2,006.40	\$ 8,025.60	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
208.0	Jollyville bar ditch, Barrington Way to Post Office	56,474	2,567	WLR	464GM	3	A1	0.021	\$ 1,185.95	\$ 3,557.86	Oct-Mar	Apr-Jun	Jul-Sept	N/A
211.0	Little WLRnut Creek, from N. Lamar Blvd to 1000 Ft. east of Georgian Dr	168,000	1,500	LWA	526EJ	2	A1	0.021	\$ 3,528.00	\$ 7,056.00	Oct-Nov	May-Jun	N/A	N/A
212.0	E of Lamplight Village Ave, Carriage Pk. to W. Parmer Ln	82,740	1,379	WLR	466P	3	A1	0.021	\$ 1,737.54	\$ 5,212.62	N/A	N/A	Jun-Oct	
214.0	N of Turnstone Dr, Nuckols Crossing to intersection of channel S of E. Stassney	175,000	3,600	WMS	675A	3	A1	0.021	\$ 3,675.00	\$ 11,025.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
215.0	502 W. Longspur, N. to Masterson Pass	95,000	1,500	LWA	496X	3	B	0.019	\$ 1,805.00	\$ 5,415.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
216.0	W. of Bundyhill Dr., MLK Blvd To Springdale Rd	12,641	1,894	FOR	586G	3	B	0.019	\$ 240.18	\$ 720.54	Oct-Mar	Apr-Jun	Jul-Sept	N/A
217.0	West of Cache Dr, Mauai Dr to Los Ranchos	32,604	741	WMS	642Q	3	B	0.019	\$ 619.48	\$ 1,858.43	Oct-Mar	Apr-Jun	Jul-Sept	N/A

Creeks - Vegetation Control Program Watershed Protection Department FY 2014-15															
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut	
218.0	Govalle Avenue (Behind ACC Campus)	35,750	550	TAN	586W	4	A2	0.050	\$ 1,787.50	\$ 7,150.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
219.0	Carson Creek	80,625	1,075	CAR	646D	3	B	0.019	\$ 1,531.88	\$ 4,595.63	Oct-Mar	Apr-Jun	Jul-Sept	N/A	
220.0	Crossing Place, from Riverside Dr. to channel east of Wikersham Ln.	74,643	1,750	CCW	615VZ	3	B	0.019	\$ 1,418.22	\$ 4,254.65	Oct-Mar	Apr-Jun	Jul-Sept	N/A	
221.0	St. Joseph/Morrow Drainage Easement (Median)	40,569	2,759	SHL	525K	5	C	0.00525	\$ 212.99	\$ 1,064.94	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
222.0	850 Tillery to 2761 Lyons Rd (behind homes)/807 Maude/Pleasant Valley @ Castro	98,833	4,457	BOG	586W	4	C	0.00525	\$ 518.87	\$ 2,075.49	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
225.0	Emeral Forest behind 5223 Meadow Creek	15,226	255	WMS	644J	2	B	0.01900	\$ 289.29	\$ 578.59	Oct-Dec	Jul-Sept	N/A	N/A	
226.0	W side of 11712 Argonne Forest Trail N to pond	19,731	449	WLN	464G	4	C	0.00525	\$ 103.59	\$ 414.35	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
227.0	Parkway and 15th Street Bridge	7,790	255	SHL	584M	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
228.0	Vacant lot at 4900 Manor Rd	42,872	861	TAN	586B	6	C	0.00525	\$ 225.08	\$ 1,350.47	Dec	March	April	May	
229.0	Vacant lot at 1137 Saucedo St	73,682	1,219	TAN	586T	6	C	0.00525	\$ 386.83	\$ 2,320.98	Bi-monthly	Bi-monthly	Bi-monthly	Bi-monthly	
230.0	Vacant lot at 2005 Indian Trl	10,153	430	JOH	584C	6	C	0.00525	\$ 100.00	\$ 600.00	Bi-monthly	Bi-monthly	Bi-monthly	Bi-monthly	
231.0	Vacant lot at 2905 Lovell Dr	12,535	456	TAN	586C	6	C	0.00525	\$ 100.00	\$ 600.00	Bi-monthly	Bi-monthly	Bi-monthly	Bi-monthly	
232.0	Vacant lot at 6408 Shoal Creek Blvd	12,450	453	SHL	525S	6	C	0.00525	\$ 100.00	\$ 600.00	Bi-monthly	Bi-monthly	Bi-monthly	Bi-monthly	
233.0	Vacant lot at 1007 Lambie St	6,246	375	LBL	615F	6	C	0.00525	\$ 100.00	\$ 600.00	Bi-monthly	Bi-monthly	Bi-monthly	Bi-monthly	
234.0	Channel next to 5501 Evans Ave	3,396	297	TAN	555M	6	C	0.00525	\$ 100.00	\$ 600.00	Bi-monthly	Bi-monthly	Bi-monthly	Bi-monthly	
235.0	Channel behind homes at 6803-6819 Williamette Dr	42,373	1,707	LWA	556M	6	C	0.00525	\$ 222.46	\$ 1,334.75	Bi-monthly	Bi-monthly	Bi-monthly	Bi-monthly	
300.0	Eleanor St (1100,1101,1103,1108,1124, 1128)/Lott Avenue	57,577	196	FOR	586Q	5	C	0.00525	\$ 100.00	\$ 500.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
301.0	W. 15th Street - COA property	53,750	430	SHL	585	5	C	0.00525	\$ 282.19	\$ 1,410.94	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
303.0	1405 Penny Street, from curbline to head/WLRI - COA Property	11,704	266	FOR	586L	5	C	0.00525	\$ 100.00	\$ 500.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
304.0	3202 -3308 Lakeside Dr - COA Vacant Lots	18,400	266	LWA	556R	5	C	0.00525	\$ 100.00	\$ 500.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
305.0	6606 - 6614 Auburnhill & 6611 Auburndale - COA Vacant lots	120,000	673	LWA	556R	5	C	0.00525	\$ 630.00	\$ 3,150.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
306.0	Trafalgar Drive, Lots 2407 and 2409	17,160	197	FOR	556U	5	C	0.00525	\$ 100.00	\$ 500.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	
307.0	5305 and 5307 Meadow - Creek Circle (2 lots)	17,250	200	WMS	644E	5	C	0.00525	\$ 100.00	\$ 500.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept	

Creeks - Vegetation Control Program														
Watershed Protection Department														
FY 2014-15														
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut
309.0	Onion Creek Lots (175 Lots) - Unpopulated Areas	1,079,965	16,562	ONI	675J	4	C	0.00525	\$ 5,669.82	\$ 22,679.27	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
309.1	Onion Creek Lots (72 Lots)- Populated Areas	1,850,252	38,611	ONI	675J	6	C	0.00525	\$ 9,713.82	\$ 58,282.94	Dec	March	April	May
310.0	Pine Knoll Dr (1612,1614) - COA Lots	14,210	230	LWA	496 N	5	C	0.00525	\$ 200.00	\$ 1,000.00	Nov	March	April	May
311.0	Dixie Drive/Foy Circle Erosion Buyouts (from curblin to boulders)	48,654	1,773	ONI	675 N	5	C	0.00525	\$ 255.43	\$ 1,277.17	Nov	March	April	May
313.0	1805 Victoria Drive - COA Lot	12,364	115	TAN	586K	5	C	0.00525	\$ 126.00	\$ 630.00	Nov	March	April	May
314.0	Richland Estates Buyouts (10 lots)	122,786	2,895	CAR	646D	5	C	0.00525	\$ 644.63	\$ 3,223.13	Nov	March	April	May
315.0	1700 Webberville Rd.	4,913	328	FOR	586L	5	C	0.00525	\$ 100.00	\$ 500.00	Nov	March	April	May
316.0	Cameron Loop - From Davis Ln. to Pond #345	50,629	3,475	SLA	642Z	5	C	0.00525	\$ 265.80	\$ 1,329.01	Nov	March	April	May
319.0	3160 Oak Springs	180,010	2,101	BOG	586N	4	A1	0.02100	\$ 3,780.21	\$ 15,120.84	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
322.0	White Rock to the wastewater line behind 6302 Shoal Creek	25,808	2,338	SHL	525S	1		0.05000	\$ 1,290.40	\$ 1,290.40	N/A	N/A	N/A	N/A
323.0	S of 1800 blk of Gracy Farms along Prairie Hen down to Golden Pheasant	49,586	1,833	WLN	496B	3	A1	0.02100	\$ 1,041.31	\$ 3,123.92	Oct-Mar	Apr-Jun	Jul-Sept	N/A
324.0	7000 blk Riverside Dr. between Frontier Valley and Anise	287,572	3,759	CAR	646B	3	A1	0.02100	\$ 6,039.01	\$ 18,117.04	Oct-Mar	Apr-Jun	Jul-Sept	N/A
325.0	Between 9403-9405 Roxanna S to behind 9506 Kempler-Tanglewood	27,515	1,251	SLA	673F	4	C	0.00525	\$ 144.45	\$ 577.82	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
326.0	2400 Monarch S to Pond #340-Tanglewood	35,293	923	SLA	673J	4	C	0.00525	\$ 185.29	\$ 741.15	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
327.0	Behind 9801 Curlew N to end of channel-Tanglewood	96,526	2,535	SLA	673E	4	C	0.00525	\$ 506.76	\$ 2,027.05	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
328.0	Channel alongside of 3107 Foxton Cv & 3108 Jubilee Tr-Tanglewood	4,398	243	SLA	672M	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
329.0	Channel behind 2506 Howellwood Way N to Pond #343-Tanglewood	14,758	475	SLA	672M	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
330.0	Riddle Road - Tanglewood	36,275	2,324	SLA	672M	4	C	0.00525	\$ 190.44	\$ 761.78	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
331.0	E of cul-de-sac at 9900 blk of Nightjar N to Crownspoint - Tanglewood	71,947	1,879	SLA	672H	4	C	0.00525	\$ 377.72	\$ 1,510.89	Oct-Dec	Feb-Mar	Apr-Jun	Jul-Sept
332.0	Creek Bend Bypass Channel	165,228	3,706	WMS	675E	2	A1	0.02100	\$ 3,469.79	\$ 6,939.58	Oct	Apr		
400.0	S of Iroquois - Melcalfe to Burlison Road	56,952	678	CCW	645B	3	C	0.00525	\$ 299.00	\$ 896.99	Oct-Mar	Apr-Jun	Jul-Sept	N/A
401.0	S. of 400 block Cumberland Rd., Cumberland Rd. to Havana St.	114,342	3,009	EBO	614U	3	C	0.00525	\$ 600.30	\$ 1,800.89	Oct-Mar	Apr-Jun	Jul-Sept	N/A
402.0	500 Johanna to 500 W. Live Oak (EBO)	26,320	470	EBO	614M	3	C	0.00525	\$ 138.18	\$ 414.54	Oct-Mar	Apr-Jun	Jul-Sept	N/A
403.0	500 W. Live Oak to 2300 S. First (EBO)	40,158	873	EBO	614R	3	C	0.00525	\$ 210.83	\$ 632.49	Oct-Mar	Apr-Jun	Jul-Sept	N/A

Creeks - Vegetation Control Program Watershed Protection Department FY 2014-15														
Flag#	Location	Area	Length	WSH	Map Page	Freq	Class	Rate	Cost per Cut	Total	1st Cut	2nd Cut	3rd Cut	4th Cut
405.0	Walter Creek Trash Pickup Only (Formerly 404 & 405)	38,721	1,976	WLR	585X	24	C	0.00525	\$ 203.29	\$ 4,878.85	2x Month	2x Month	2x Month	2x Month
406.0	N of Southport Dr, Southridge Dr, E to RR	16,016	728	WBO	614T	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
407.0	1200 Cumberland to 1000 Barton Skyway	105,508	2,029	WBO	614PQ	3	C	0.00525	\$ 553.92	\$ 1,661.75	Oct-Mar	Apr-Jun	Jul-Sept	N/A
408.0	1400 Southport Drive - (Mow 1 time per year)	12,180	420	WBO	614T	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
409.0	1300 W. Oltorf to Fieldcrest Dr, 1300 W. Oltorf to 700 W. Mary	220,800	3,450	WBO	614L	3	C	0.00525	\$ 1,159.20	\$ 3,477.60	Oct-Mar	Apr-Jun	Jul-Sept	N/A
410.0	4900 S. 1st to 5000 S. 1st (WMS)	328,320	1,824	WMS	644K	3	C	0.00525	\$ 1,723.68	\$ 5,171.04	Oct-Mar	Apr-Jun	Jul-Sept	N/A
411.0	Williamson Creek, Emerald Forest to S. 1st St.	309,960	2,870	WMS	644JK	3	C	0.00525	\$ 1,627.29	\$ 4,881.87	Oct-Mar	Apr-Jun	Jul-Sept	N/A
412.0	Behind 5710 McCarty Lane, from fence 40' by -87 ft (in both upstr and downstr directions)	11,014	821	WMS	612T	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Mar	Apr-Jun	Jul-Sept	N/A
413.0	E Bouldin from lake to under culvert to S side of Riverside	3,981	1,324	EBD	614D	12	C	0.00525	\$ 100.00	\$ 1,200.00	Monthly	Monthly	Monthly	Monthly
414.0	W Bouldin Creek (from Riverside to Barton Springs Rd.)	7,146	2,392	WBO	614G	12	C	0.00525	\$ 100.00	\$ 1,200.00	Monthly	Monthly	Monthly	Monthly
415.0	Shoal Creek Trash Pickup Only	26,564	8,878	SHL	584V	12	C	0.00525	\$ 139.46	\$ 1,673.53	Monthly	Monthly	Monthly	Monthly
500.0	Concrete Channel along Hemphill Park from W 33rd through the area south of 30th St	19,471	1,391	WLR	526S	1	A1	?	\$ 408.89	\$ 408.89	N/A	N/A	N/A	N/A
253	Number of Locations		434,416	Feet										
	Total Acres	485.02	82.28	Miles										
	Total Under Contract		82.28	Miles				Totals	\$ 285,653.75	\$ 988,877.75				
	Total Length Identified		82.28	Miles						\$ 33,000.00	Predicted Onion Creek Buyouts Additions			
	Percent of Identified Miles Under Contract		100%							\$ 1,021,877.75	Total			

EXHIBIT B

Vegetation Control Program - Ponds
Watershed Protection and Development Review
FY 2014-2015

TIBH-EASTER SEALS

Flag Number	Flag Number Ponds	Location	Street Number	Area	Map Page	Zone	Freq	Class	Rate	Cost per Cut	Total	Oct-Dec	Mar-Apr	May-June	July-Sep
												1st Cut	2nd Cut	3rd Cut	4th Cut
2	2	Ladera Norte	6403	33,339	524F	2	4	C	0.00525	\$ 175.03	\$ 700.12	Oct-Dec	Mar-Apr	May-June	July-Sep
3	3	Wagon Drive	7510	48,001	494S	2	4	C	0.00525	\$ 241.51	\$ 966.02	Oct-Dec	Mar-Apr	May-June	July-Sep
4	4	Jollyville Road	11008	2,704	465W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
6	6	Taylor Dragon Lane	11200	8,101	464V	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
7	7	Tech Trail (was Four Points Drive)	11200	18,038	462Y	2	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Dec	SKIP	May-June	July-Sep
8	8	Enchanted Rock Cove	10901	9,761	433X	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
9	9	Appletree Lane	11113	7,390	433W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
10	10	Shade Tree Cove	11502	27,328	464M	2	4	C	0.00525	\$ 143.46	\$ 573.85	Oct-Dec	Mar-Apr	May-June	July-Sep
11	11	Appletree Lane	11207	18,581	433W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
12	12	Crossland Drive	11012	19,452	433X	2	4	C	0.00525	\$ 102.12	\$ 408.49	Oct-Dec	Mar-Apr	May-June	July-Sep
13	13	Sierra Nevada	10803	24,371	464U	2	4	C	0.00525	\$ 127.95	\$ 511.79	Oct-Dec	Mar-Apr	May-June	July-Sep
14	14	Braker Lane East at Gales Lane	6900	3,021	528S	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
15	15	River Place Blvd.	7100	5,873	492D	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
16	16	Kramer Lane	1800	14,859	496J	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
20	20	Wilson Parks Avenue	11802	6,768	462Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
21	21	Wilson Parks Avenue	11902	10,600	462Q	2	3	C	0.00525	\$ 100.00	\$ 300.00	Oct-Dec	SKIP	May-June	July-Sep
22	22	Walston Park Circle	12418	43,439	462P	2	4	C	0.00525	\$ 228.05	\$ 912.22	Oct-Dec	Mar-Apr	May-June	July-Sep
24	24	Wilson Parks Avenue	12501	6,681	462K	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
25	25	Convent Hill Road	6310	19,124	642A	3	4	C	0.00525	\$ 100.40	\$ 401.60	Oct-Dec	Mar-Apr	May-June	July-Sep
26	26	Mearns Meadow	1000	314,400	498W	1	4	C	0.00525	\$ 1,650.80	\$ 6,602.40	Oct-Dec	Mar-Apr	May-June	July-Sep
27	27	Crocket Hollow Drive	1500	41,554	496J	1	4	C	0.00525	\$ 218.16	\$ 872.63	Oct-Dec	Mar-Apr	May-June	July-Sep
28	28	Browne Drive	10000	59,734	526C	1	4	C	0.00525	\$ 313.60	\$ 1,254.41	Oct-Dec	Mar-Apr	May-June	July-Sep
29	29	Ashley Way	2505	71,206	674L	1	4	C	0.00525	\$ 373.83	\$ 1,495.33	Oct-Dec	Mar-Apr	May-June	July-Sep
30	30	Spicerwood Springs Rd	8604	72,875	464B	2	3	C	0.00525	\$ 382.59	\$ 1,147.78	Oct-Dec	SKIP	May-June	July-Sep
31	31	Mo-Pac Exwy N NB	8003	80,737	525A	2	4	C	0.00525	\$ 423.87	\$ 1,695.48	Oct-Dec	Mar-Apr	May-June	July-Sep
32	32	Spicerwood Springs	3900	17,482	524D	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
35	35	Mo-Pac Exwy N NB	8001	38,025	525A	2	4	C	0.00525	\$ 199.63	\$ 798.53	Oct-Dec	Mar-Apr	May-June	July-Sep
37	37	Woodhollow Dr	7600	28,064	524H	2	4	C	0.00525	\$ 147.34	\$ 589.34	Oct-Dec	Mar-Apr	May-June	July-Sep
38	38	Mo-Pac Exwy N NB	8005	88,250	525A	2	4	C	0.00525	\$ 483.31	\$ 1,853.25	Oct-Dec	Mar-Apr	May-June	July-Sep
39	39	Shade Tree Drive	710	94,586	673X	1	4	C	0.00525	\$ 496.47	\$ 1,985.89	Oct-Dec	Mar-Apr	May-June	July-Sep
40	40	Maitland Cross w/ ditch	702	76,063	703B	1	4	C	0.00525	\$ 399.33	\$ 1,597.32	Oct-Dec	Mar-Apr	May-June	July-Sep
41	41	Woodhollow Cove	7610	1,458	493M	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
42	42	Image Cove	7809	4,253	493R	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
43	43	West Courtyard Drive	6800	2,076	523H	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
44	44	Basil Cove	7601	3,426	493R	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
45	45	Prokies Cove	6809	1,370	523C	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
46	46	Astoria Court	8202	10,604	493L	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
47	47	Long Court	5808	2,179	523H	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
49	49	Long Court	5908	1,246	523D	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
51	51, 678, 976	Amanda Ellis Way (was Beckett Road)	7601	46,288	642F	3	4	C	0.00525	\$ 243.01	\$ 972.05	Oct-Dec	Mar-Apr	May-June	July-Sep

52	52, 1154	Willet Trail	8011	167,944	643W	3	4	C	0.00525	\$ 881.71	\$ 3,526.82	Oct-Dec	Mar-Apr	May-June	July-Sep
54	54	Breezy Pass	6606	12,248	611Z	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
55	55	West Slaughter Lane	900	43,770	673J	1	4	C	0.00525	\$ 229.79	\$ 919.17	Oct-Dec	Mar-Apr	May-June	July-Sep
58	58	Texas Sun Drive	9135	14,698	673K	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
61	61	U.S. 290 W.	7300	5,811	611Z	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
65	65	Yaupon Drive	7712	8,392	464P	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
68	68	Cortina Drive	4300	26,206	642U	3	4	A	0.00525	\$ 137.58	\$ 550.33	Oct-Dec	Mar-Apr	May-June	July-Sep
69	69	Rialto Blvd (was William Cannon Drive)	7200	33,507	612J	3	4	C	0.00525	\$ 175.91	\$ 703.65	Oct-Dec	Mar-Apr	May-June	July-Sep
70	70, 74, 977	Coastal Drive	8505	98,401	642U	3	4	A	0.00525	\$ 516.81	\$ 2,066.42	Oct-Dec	Mar-Apr	May-June	July-Sep
71	71	Corpus Christi Drive	6717	4,166	435S	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
75	75	Convict Hill Road	6300	25,057	642E	3	4	C	0.00525	\$ 131.55	\$ 526.20	Oct-Dec	Mar-Apr	May-June	July-Sep
81	81, 980	Escarpment Blvd.	7200	24,344	642B	3	4	C	0.00525	\$ 127.81	\$ 511.22	Oct-Dec	Mar-Apr	May-June	July-Sep
82	82	West William Cannon Drive	6502	6,312	612T	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
84	84	Cannon Mt. Drive	6017	28,349	642A	3	4	C	0.00525	\$ 148.83	\$ 595.33	Oct-Dec	Mar-Apr	May-June	July-Sep
85	85	Escarpment Blvd.	7001	8,958	612W	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
86	86	King Albert	822	7,355	644N	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
89	89	Breezy Pass Cove	7203	4,654	611Z	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
90	90	La Naranja Ln	6001	10,875	642J	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
92	92	Avary Cove	6208	31,489	675E	1	4	C	0.00525	\$ 165.32	\$ 661.27	Oct-Dec	Mar-Apr	May-June	July-Sep
93	93	City Park Road	6000	1,317	523D	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
101	101	West Slaughter Lane	700	80,301	673L	1	4	C	0.00525	\$ 421.58	\$ 1,686.32	Oct-Dec	Mar-Apr	May-June	July-Sep
104	104	Spring Valley Drive	8307	20,801	611Q	3	4	C	0.00525	\$ 109.21	\$ 436.82	Oct-Dec	Mar-Apr	May-June	July-Sep
108	108	Bradsher Drive	6509	3,586	644W	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
112	112	Convict Hill Road	6000	7,700	642A	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
115	115	Oltorf St. E.	4900	49,117	645C	1	4	C	0.00525	\$ 257.87	\$ 1,031.46	Oct-Dec	Mar-Apr	May-June	July-Sep
116	116	Patsy Parkway	2513	311,953	674L	1	4	C	0.00525	\$ 1,637.75	\$ 6,551.01	Oct-Dec	Mar-Apr	May-June	July-Sep
120	120	Cana Cove	4911	15,141	612Y	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
122	122	Liberty Park Drive	1200	7,328	584W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
127	127	Gallena Cove	11017	4,305	464V	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
128	128	Montebello Road	2805	802	584W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
129	129	John Blocker Drive	7308	2,895	642B	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
130	130	Grapevine Lane	11000	6,975	464Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
132	132	Metric Blvd.	12401	194,508	466T	1	4	C	0.00525	\$ 1,021.17	\$ 4,084.67	Oct-Dec	Mar-Apr	May-June	July-Sep
136	136	Forest Heights Ln	8104	61,559	642F	3	4	C	0.00525	\$ 323.18	\$ 1,292.72	Oct-Dec	Mar-Apr	May-June	July-Sep
137	137	Vargas Road	1500	99,301	616W	1	4	C	0.00525	\$ 521.33	\$ 2,085.32	Oct-Dec	Mar-Apr	May-June	July-Sep
138	138	Ember Glen Drive	10300	17,771	433W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
140	140	Harris Branch Blvd.	10600	5,507	528X	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
141	141	Harris Branch Blvd.	10700	2,645	528X	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
142	142	Harris Branch Blvd.	11101	8,967	528P	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
143	143	Harris Branch Blvd.	11301	12,474	528K	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
144	144, 983	John Blocker	7201	43,918	642B	3	4	C	0.00525	\$ 230.57	\$ 922.28	Oct-Dec	Mar-Apr	May-June	July-Sep
146	146, 1075	Monticope Drive	3100	28,864	645M	1	4	C	0.00525	\$ 151.54	\$ 608.14	Oct-Dec	Mar-Apr	May-June	July-Sep
147.2	147.2	Oak Springs	3100	484,762	586S	1	4	C	0.00525	\$ 2,545.00	\$ 10,180.00	Oct-Dec	Mar-Apr	May-June	July-Sep
151	151	Vista Parke at 620	11600	7,854	462U	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
153	153	Winterberry Drive #1	6700	2,467	493Z	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
155	155, 984	Aspen Creek Parkway at Brodie	3500	222,375	672L	3	4	C	0.00525	\$ 1,167.47	\$ 4,669.88	Oct-Dec	Mar-Apr	May-June	July-Sep
156	156	Bancroft Woods Cove	12800	14,006	434Z	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep

157	157	Bancroft Woods Drive	6701	8,348	434Z	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
158	158	Edward's Mountain Drive	4101	11,587	524Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
162	162	Baton Rouge Drive	5900	152,413	465A	2	4	C	0.00525	\$ 800.17	\$ 3,200.67	Oct-Dec	Mar-Apr	May-June	July-Sep
163	163	Sebrite Lane	11018	14,915	463A	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
164	164	Boulder Lane	11031	25,819	433W	2	4	C	0.00525	\$ 135.55	\$ 542.20	Oct-Dec	Mar-Apr	May-June	July-Sep
165	165	Boulder Lane	11051	6,639	433W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
166	166	Zellar Lane	12414	7,309	497E	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
169	169	Burleson Road	6011	12,430	645R	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
170	170	Edwardson Cove	6708	57,355	641M	3	4	C	0.00525	\$ 301.11	\$ 1,204.46	Oct-Dec	Mar-Apr	May-June	July-Sep
172	172	Tamar Lane	1400	19,265	466Q	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
173	173	Chelsea Moor Drive	6805	19,896	464G	2	4	C	0.00525	\$ 104.45	\$ 417.82	Oct-Dec	Mar-Apr	May-June	July-Sep
174	174	Boulder Lane at end of Boulder	10900	27,442	463A	2	4	C	0.00525	\$ 144.07	\$ 576.28	Oct-Dec	Mar-Apr	May-June	July-Sep
175	175	Sir Chnstopher's Cove	12535	4,814	434Y	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
177	177	Farmdale Ln	6511	7,118	641M	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
181	181	Dempsey Lane	8401	14,518	673G	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
182	182	Duval	3400	28,500	465U	2	2	C	0.00525	\$ 149.63	\$ 299.25	SKIP	SKIP	May-June	July-Sep
183	183	Deval	3800	64,034	465U	2	2	C	0.00525	\$ 336.18	\$ 672.36	SKIP	SKIP	May-June	July-Sep
184	184	Palace Parkway	8301	91,906	673G	1	4	C	0.00525	\$ 482.51	\$ 1,930.03	Oct-Dec	Mar-Apr	May-June	July-Sep
185	185	Edward's Mountain	3808	6,428	524Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
189	189	Escarpment Boulevard	7255	1,669	612W	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
191	191, 238, 295	Farmdale Ln	6309	45,397	641M	3	4	C	0.00525	\$ 238.33	\$ 953.34	Oct-Dec	Mar-Apr	May-June	July-Sep
194	194	Palace Parkway	8329	25,737	673G	1	4	C	0.00525	\$ 135.12	\$ 540.48	Oct-Dec	Mar-Apr	May-June	July-Sep
196	196	Burleson Road	5801	8,753	645Q	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
199	199, 985	Kerosha Pass	6800	49,398	612W	3	4	C	0.00525	\$ 259.33	\$ 1,037.31	Oct-Dec	Mar-Apr	May-June	July-Sep
200	200	Lady Suzannes Court	7400	11,550	434Y	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
202	202	Metric Boulevard	13100	28,061	466L	1	4	C	0.00525	\$ 147.32	\$ 589.28	Oct-Dec	Mar-Apr	May-June	July-Sep
204	204	Wheatfall Lane	1426	13,957	673G	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
205	205	Neenah Avenue	9850	24,436	404Q	2	4	C	0.00525	\$ 128.29	\$ 513.16	Oct-Dec	Mar-Apr	May-June	July-Sep
209	209, C05801	Park Bend Dr.	2217	518,817	466W	1	4	C	0.00525	\$ 2,723.79	\$ 10,895.16	Oct-Dec	Mar-Apr	May-June	July-Sep
211	211	Braided Rope	1413	13,501	466U	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
212	212	Saton Center Parkway	4700	123,933	465W	2	4	C	0.00525	\$ 650.65	\$ 2,602.59	Oct-Dec	Mar-Apr	May-June	July-Sep
215a	215a	Channel from Axis Drive Cul-de-Sac to Latta		2,771	642P	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
220	220	Mopac S. (Dick Nichols Regional Pond Dam)	-----	82,843	642K	3	4	C	0.00525	\$ 434.92	\$ 1,739.70	Oct-Dec	Mar-Apr	May-June	July-Sep
221	221	Scotfield Farms Drive A	12901	27,366	466Q	1	4	C	0.00525	\$ 143.67	\$ 574.69	Oct-Dec	Mar-Apr	May-June	July-Sep
222	222	Scotfield Farms Dr B (1317 Braided Rope)	12801	9,746	466Q	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
224	224, 282, 1077	Heights Dr w/ channel	4300	98,890	583P	2	4	C	0.00525	\$ 519.17	\$ 2,076.69	Oct-Dec	Mar-Apr	May-June	July-Sep
225	225	Metric at Chasewood	13200	4,828	466G	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
226	226	Mosquero Circle	8608	4,109	673B	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
227	227	Small Drive	4401	3,409	524T	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
228	228	Spicewood Mesa	9800	6,082	464N	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
232	232	Convict Hill Road or 6420 Ira Ingram w/ channel	6321	13,718	642A	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
233	233	Taylor Draper Cove (Pond 1)	5901	27,326	464R	2	4	C	0.00525	\$ 143.46	\$ 573.85	Oct-Dec	Mar-Apr	May-June	July-Sep
234	234	Turtle Rock Rd	12700	11,986	434T	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
238	238, 1078	Wilderness Dr.	1334	17,979	583U	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
239	239	Donavan Circle	12312	5,942	497E	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
240	240	Glengarry Drive	4001	2,426	524Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
241	241	Glengarry Drive	4004	3,862	524Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep

242	242	Armaga Springs	13219	16,821	466F	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
245	245, 1079	Q Ranch Road	11500	50,143	464M	2	4	C	0.00525	\$ 283.25	\$ 1,053.00	Oct-Dec	Mar-Apr	May-June	July-Sep
246	246	Harrogate	6102	7,363	464Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
247	247	Harrogate	6226	4,878	464Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
248	248	Eddystone Street	9220	17,925	434N	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
249	249	Sweet Cherry Drive	8512	7,927	464J	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
250	250	Indigo Brush	9544	23,914	463A	2	4	C	0.00525	\$ 125.55	\$ 502.19	Oct-Dec	Mar-Apr	May-June	July-Sep
251	251	Cedarcliff Drive	11200	25,193	464A	2	4	C	0.00525	\$ 132.26	\$ 529.05	Oct-Dec	Mar-Apr	May-June	July-Sep
253	253	Ridge Oak	7127	14,891	642B	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
254	254	Kincaid Court (off Kirkglan)	12208	7,402	468Q	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
255	255	Edgemere Dr	18509	59,072	437Q	1	4	C	0.00525	\$ 310.13	\$ 1,240.51	Oct-Dec	Mar-Apr	May-June	July-Sep
256	256	Liberty Park Drive (and channel)	1041	4,753	584W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
257	257	Chateaufort Drive	2900	10,703	583Z	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
258	258	Aides Drive	7301	29,456	642U	3	4	C	0.00525	\$ 154.64	\$ 618.58	Oct-Dec	Mar-Apr	May-June	July-Sep
266	266	Anarosa Loop	13527	8,637	466F	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
267	267	Great Northern Far West		458,080	525J	1	3	C	0.00525	\$ 2,404.92	\$ 7,214.76	Oct-Dec	SKIP	May-June	July-Sep
268	268, 131	W. Parmer	1900	271,933	468P	1	4	C	0.00525	\$ 1,427.65	\$ 5,710.59	Oct-Dec	Mar-Apr	May-June	July-Sep
269	269	Valiant Cove	5600	7,948	612U	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
270	270	Valiant Cove	6001	7,385	612U	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
273	273	Chateaufort Drive	2800	6,588	583Z	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
276	276	Sawmill Drive	3503	21,470	672F	3	4	C	0.00525	\$ 112.72	\$ 450.87	Oct-Dec	Mar-Apr	May-June	July-Sep
277	277, 986	Malone Drive N. of Aspen Creek Parkway		87,594	672F	3	4	C	0.00525	\$ 459.87	\$ 1,839.47	Oct-Dec	Mar-Apr	May-June	July-Sep
283	283	Camp Craft Rd	1716	1,333	583N	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
284	284	Surrey Hill	2014	26,914	583P	2	4	C	0.00525	\$ 141.30	\$ 565.19	Oct-Dec	Mar-Apr	May-June	July-Sep
286	286, 1081	Walsh Tarton	2100	5,921	583Y	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
287	287	La Sesta Bend	8932	36,543	641M	3	4	C	0.00525	\$ 191.85	\$ 767.40	Oct-Dec	Mar-Apr	May-June	July-Sep
292	292	Silk Oak Drive & Silk Oak Cove	3405	28,162	672D	3	4	C	0.00525	\$ 147.85	\$ 591.40	Oct-Dec	Mar-Apr	May-June	July-Sep
293	293	Silkgrass Bend	3201	24,892	672D	3	4	C	0.00525	\$ 130.68	\$ 522.73	Oct-Dec	Mar-Apr	May-June	July-Sep
294	294	Tea Rose	9606	21,976	672D	3	4	C	0.00525	\$ 115.37	\$ 461.50	Oct-Dec	Mar-Apr	May-June	July-Sep
298	298	Nairn Drive	8414	17,340	642K	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
301	301	Farmdale Ln	6413	4,820	641M	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
302	302	Clairmont Dr	6312	14,556	641H	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
303	303	Clairmont Dr	6408	4,032	641H	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
304	304	Clairmont Dr	6504	6,555	641H	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
306	306	Hot Springs Drive	8615	60,598	641H	3	4	C	0.00525	\$ 318.14	\$ 1,272.56	Oct-Dec	Mar-Apr	May-June	July-Sep
307	307	Lattendge	781	25,840	673H	1	4	C	0.00525	\$ 135.66	\$ 542.64	Oct-Dec	Mar-Apr	May-June	July-Sep
308	308	Lattendge	749	21,706	673H	1	4	C	0.00525	\$ 113.96	\$ 455.83	Oct-Dec	Mar-Apr	May-June	July-Sep
310	310	Galleria Cove	11016	8,698	464V	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
313	313	West Slaughter Lane (N.E. corner)	6702	7,831	641Q	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
314	314	West Slaughter Lane (southside)	6901	5,917	641Q	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
315	315	West Slaughter Lane	8601	25,933	641Q	3	4	C	0.00525	\$ 136.15	\$ 544.59	Oct-Dec	Mar-Apr	May-June	July-Sep
317	317	Daingreen (across from school)	1200	28,953	641Z	3	4	C	0.00525	\$ 152.00	\$ 608.01	Oct-Dec	Mar-Apr	May-June	July-Sep
318	318	Escarpment Blvd. at Redman Drive	10501	16,555	641Y	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
319	319	Back Bay Lane	6210	16,029	671C	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
320	320	End of Escarpment at Aden	11301	71,376	671F	3	4	C	0.00525	\$ 374.72	\$ 1,498.90	Oct-Dec	Mar-Apr	May-June	July-Sep
322	322	Slaughter Lane (N.W. corner)	7000	21,939	641L	3	4	C	0.00525	\$ 115.18	\$ 460.72	Oct-Dec	Mar-Apr	May-June	July-Sep
324	324	Minot Circle	8725	50,765	673B	3	4	C	0.00525	\$ 266.52	\$ 1,066.07	Oct-Dec	Mar-Apr	May-June	July-Sep

327	327	Tyhurst Dr	8404	14,712	642J	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
335	335, 987	Republic of Texas Boulevard	5620	213,359	612H	2	4	C	0.00525	\$ 1,120.13	\$ 4,480.54	Oct-Dec	Mar-Apr	May-June	July-Sep
336	336	Davis Lane	6100	12,424	642J	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
337	337	Toulouse Dr	2214	49,428	673F	3	4	C	0.00525	\$ 259.50	\$ 1,037.99	Oct-Dec	Mar-Apr	May-June	July-Sep
338	338	Manchaca Rd	9322	83,402	673K	3	4	C	0.00525	\$ 437.86	\$ 1,751.44	Oct-Dec	Mar-Apr	May-June	July-Sep
339	339	Manchaca Rd	9510	37,775	673K	3	4	C	0.00525	\$ 198.32	\$ 793.28	Oct-Dec	Mar-Apr	May-June	July-Sep
340	340	W. Slaughter Ln	2404	77,587	673J	3	4	C	0.00525	\$ 407.33	\$ 1,629.33	Oct-Dec	Mar-Apr	May-June	July-Sep
341	341	Jubilee Trail	3115	7,716	672L	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
342	342	W. Slaughter Ln	2715	442,458	672M	3	4	C	0.00525	\$ 2,322.90	\$ 9,291.62	Oct-Dec	Mar-Apr	May-June	July-Sep
343	343	W. Slaughter Ln	2601	18,724	673J	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
345	345	Piney Creek Bend	8618	145,873	643W	3	4	C	0.00525	\$ 765.83	\$ 3,063.33	Oct-Dec	Mar-Apr	May-June	July-Sep
346	346	Davis Lane & Huebinger Pass	2600	195,823	673A	3	4	C	0.00525	\$ 1,028.07	\$ 4,112.28	Oct-Dec	Mar-Apr	May-June	July-Sep
347	347, 1043	Lagerway Cove	2955	85,513	672H	3	4	C	0.00525	\$ 448.94	\$ 1,795.77	Oct-Dec	Mar-Apr	May-June	July-Sep
351	351	Sikgrass Bend	3223	69,937	672D	3	4	C	0.00525	\$ 367.17	\$ 1,468.68	Oct-Dec	Mar-Apr	May-June	July-Sep
354	354	Nivea Drive	2900	146,483	702B	3	4	C	0.00525	\$ 769.04	\$ 3,078.14	Oct-Dec	Mar-Apr	May-June	July-Sep
355	355	Yandall Drive	2639	28,956	702C	3	4	C	0.00525	\$ 152.02	\$ 608.07	Oct-Dec	Mar-Apr	May-June	July-Sep
356	356	Fire Oak Drive	7506	64,283	464P	2	3	C	0.00525	\$ 337.49	\$ 1,012.46	Oct-Dec	SKIP	May-June	July-Sep
357	357, 358	Rockwell Court	11300	56,069	433T	2	4	C	0.00525	\$ 294.36	\$ 1,177.45	Oct-Dec	Mar-Apr	May-June	July-Sep
359	359	Laurel Creek Drive	11100	9,174	433T	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
362	362	Olive Hill	14512	29,310	404Q	2	4	C	0.00525	\$ 153.88	\$ 615.51	Oct-Dec	Mar-Apr	May-June	July-Sep
367	367, 1080	Benbrook Drive	3200	117,145	495X	2	4	C	0.00525	\$ 615.01	\$ 2,460.05	Oct-Dec	Mar-Apr	May-June	July-Sep
368	368	Taylor Draper Cove (Pond 2)	5909	18,095	464R	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
369	369	Yett Creek Park		120,285	465F	2	2	C	0.00525	\$ 631.50	\$ 1,262.99	SKIP	SKIP	May-June	July-Sep
373	373	Tahoma Place	5730	13,732	464V	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
392	392	Oak Knoll Drive	11007	9,782	464Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
416	416	Crissom Lane	15418	26,148	436L	1	4	C	0.00525	\$ 137.28	\$ 549.11	Oct-Dec	Mar-Apr	May-June	July-Sep
418	418, 1082	Lantana Way	8918	14,200	641M	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
423	423	E Stassney Lane # 1	6101	17,597	645U	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
424	424	E Stassney Lane # 2	6001	11,445	645U	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
425	425	E Stassney Lane # 3	6201	18,813	645U	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
426	426	E Stassney Lane # 4	6301	32,138	645U	1	4	C	0.00525	\$ 168.73	\$ 674.90	Oct-Dec	Mar-Apr	May-June	July-Sep
429	429, 1083	Coaco Drive	2000	78,875	672Z	3	4	C	0.00525	\$ 414.09	\$ 1,658.38	Oct-Dec	Mar-Apr	May-June	July-Sep
432	432	William Wallace Way	7021	446,981	528P	1	4	C	0.00525	\$ 2,346.65	\$ 9,386.60	Oct-Dec	Mar-Apr	May-June	July-Sep
435	435	Scotfield Farms Drive	13011	13,929	446Q	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
438	438	Deboce Drive	6709	1,530	641D	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
441	441	Alone Way	9429	26,593	404Q	2	4	C	0.00525	\$ 139.61	\$ 558.45	Oct-Dec	Mar-Apr	May-June	July-Sep
444	444	War Path	12820	58,030	465H	2	4	C	0.00525	\$ 304.66	\$ 1,218.63	Oct-Dec	Mar-Apr	May-June	July-Sep
445	445	Neenah Ave at Olive Hill	9713	35,086	404Q	2	4	C	0.00525	\$ 184.20	\$ 736.81	Oct-Dec	Mar-Apr	May-June	July-Sep
457	457	Spectrum Drive	9501	1,681	404Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
458	458	Spectrum Drive	9700	3,973	404Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
466	466	Poncha Pass	6745	11,272	641D	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
467	467, 1084	Hillhaven Drive	13317	104,658	702D	3	4	C	0.00525	\$ 549.45	\$ 2,197.82	Oct-Dec	Mar-Apr	May-June	July-Sep
470	470	Sendero Drive	4001	202,786	613A	2	4	C	0.00525	\$ 1,064.63	\$ 4,258.51	Oct-Dec	Mar-Apr	May-June	July-Sep
474	474	Evening Primrose Path	900	82,340	464G	2	4	C	0.00525	\$ 432.29	\$ 1,729.14	Oct-Dec	Mar-Apr	May-June	July-Sep
483	483	W. Slaughter Lane	4006	11,758	672B	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
484	484	Centennial Trail	10923	1,836	433T	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
485	485	West Rundberg Lane	909	113,077	526A	1	4	C	0.00525	\$ 593.65	\$ 2,374.62	Oct-Dec	Mar-Apr	May-June	July-Sep

492	492	Edwardson Cove	6701	20,947	641M	3	4	C	0.00525	\$ 109.97	\$ 439.89	Oct-Dec	Mar-Apr	May-June	July-Sep
493	493	Cinnabar Trail	9717	7,589	483A	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
494	494	Aylford Court	5900	12,777	671D	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
495	496	Galworthy Lane	10804	13,372	671D	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
496	496	Redmond Cove	10605	6,516	671D	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
497	497	Armaga Springs Road	13105	12,889	466F	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
499	499, 1085	Taylorcrest Drive	6307	49,369	641M	3	4	C	0.00525	\$ 259.19	\$ 1,036.75	Oct-Dec	Mar-Apr	May-June	July-Sep
500	500	Davis Lane	5100	8,057	642P	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
502	502	Fulbright Lane	8600	18,510	642N	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
503	503	Mesa Verde Court	8700	23,125	642J	3	4	C	0.00525	\$ 121.40	\$ 485.62	Oct-Dec	Mar-Apr	May-June	July-Sep
504	504	Beckett Road	8450	6,408	642J	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
505	505	Davis Lane	4200	240,218	642Q	3	4	C	0.00525	\$ 1,261.14	\$ 5,044.58	Oct-Dec	Mar-Apr	May-June	July-Sep
507	507	La Crosse Avenue	4905	12,714	671D	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
511	511	Real Catorce	2200	21,243	583T	2	4	C	0.00525	\$ 111.53	\$ 446.10	Oct-Dec	Mar-Apr	May-June	July-Sep
513	513	Randolph Ridge Trail	1813	4,229	583T	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
516	516, 1086	Circulo De Amistad	6500	45,609	616T	1	4	C	0.00525	\$ 239.45	\$ 957.79	Oct-Dec	Mar-Apr	May-June	July-Sep
517	517	Grove Boulevard	705	3,251	616T	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
518	518	Galleria Cove	11016	3,611	484V	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
519	519	Convict Hill Road	6603	6,876	612W	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
528	528	Norman Trail	4425	197,496	642H	3	4	C	0.00525	\$ 987.48	\$ 3,949.92	Oct-Dec	Mar-Apr	May-June	July-Sep
529	529	Escarpment Boulevard	10302	4,692	641Z	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
533	533	Laurel Creek Drive	11120	7,339	433S	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
535	535	Scofield Ridge Parkway	1801	18,874	486G	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
536	536	Metric Blvd @ Crosswood	13201	22,625	466L	1	4	C	0.00525	\$ 118.78	\$ 475.13	Oct-Dec	Mar-Apr	May-June	July-Sep
537	537	Escarpment Blvd	8825	103,629	641M	3	4	C	0.00525	\$ 544.05	\$ 2,176.21	Oct-Dec	Mar-Apr	May-June	July-Sep
538	538, 1087	Santa Oaks	11900	24,857	464Q	2	4	C	0.00525	\$ 130.50	\$ 522.00	Oct-Dec	Mar-Apr	May-June	July-Sep
547	547	Belbrook Place	10005	13,640	673X	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
548	548	Railro Blvd	7200	13,038	612J	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
551	551	Tahoe Parke Circle	8152	21,128	462K	2	4	C	0.00525	\$ 110.92	\$ 443.69	Oct-Dec	Mar-Apr	May-June	July-Sep
552	552	Cloud Mountain Circle	12718	8,982	462K	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
553	553	Castle Peak Trail	7906	8,319	462K	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
554	554	Alberta Ridge Trail	12501	9,646	462K	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
555	555	Alberta Ridge Trail	12708	9,745	462K	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
556	556	Denison Drive	405	218,780	555C	1	4	C	0.00525	\$ 1,148.60	\$ 4,594.36	Oct-Dec	Mar-Apr	May-June	July-Sep
557	557, 558	Poncha Pass	6809	39,554	641D	3	4	C	0.00525	\$ 207.68	\$ 830.63	Oct-Dec	Mar-Apr	May-June	July-Sep
559	559, 1088	Baxter Springs Road	8104	47,740	673C	1	4	C	0.00525	\$ 250.64	\$ 1,002.54	SKIP	Mar-Apr	May-June	July-Sep
560	560, 1089	Kansas River Drive	8300	112,523	673B	1	4	C	0.00525	\$ 590.75	\$ 2,362.98	Oct-Dec	Mar-Apr	May-June	July-Sep
561	561	Kimono Ridge Dr.	8600	27,095	673K	1	4	C	0.00525	\$ 142.25	\$ 569.00	Oct-Dec	Mar-Apr	May-June	July-Sep
562	562	Kimono Ridge Dr.	9100	52,522	673K	1	4	C	0.00525	\$ 275.74	\$ 1,102.96	Oct-Dec	Mar-Apr	May-June	July-Sep
566	566, 570, 991	Arbor Downs Rd	12140	124,333	672Y	3	4	C	0.00525	\$ 652.75	\$ 2,610.99	Oct-Dec	Mar-Apr	May-June	July-Sep
567	567	Kinney Oaks Court	2825	10,497	614P	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
568	568	Kinney Oaks Court	2623	15,934	614P	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
569	569	Constantino Circle	1700	19,269	643U	1	4	C	0.00525	\$ 101.16	\$ 404.65	Oct-Dec	Mar-Apr	May-June	July-Sep
571	571	Camposina Drive	13425	12,221	466F	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
572	572	Brig Cherry Lane	9408	9,205	463D	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
580	580	Gabling Gun Lane	12000	95,656	702C	3	4	C	0.00525	\$ 502.20	\$ 2,008.78	Oct-Dec	Mar-Apr	May-June	July-Sep
583	583	Bull Run	5323	15,170	465J	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep

590	590	West Slaughter Lane	4700	993	642T	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
591	591	Bramblecrest Drive	10704	40,223	433X	2	4	C	0.00525	\$ 211.17	\$ 844.68	Oct-Dec	Mar-Apr	May-June	July-Sep
593	593	Grand Avenue Parkway		129,928	436G	1	4	C	0.00525	\$ 682.12	\$ 2,728.49	Oct-Dec	Mar-Apr	May-June	July-Sep
601	601	Olive Hill Drive	14816	28,140	404Q	2	4	C	0.00525	\$ 147.74	\$ 590.94	Oct-Dec	Mar-Apr	May-June	July-Sep
604	604, 1090	Opal Trail @ Buggy Whip (North and South)		52,258	433P	2	4	C	0.00525	\$ 274.35	\$ 1,097.42	Oct-Dec	Mar-Apr	May-June	July-Sep
610	610	Pirun Court	3601	45,005	612D	2	4	C	0.00525	\$ 236.28	\$ 945.11	Oct-Dec	Mar-Apr	May-June	July-Sep
612	612, 1091	Chadbury Cove	4825	43,558	465P	2	4	C	0.00525	\$ 228.68	\$ 914.72	Oct-Dec	Mar-Apr	May-June	July-Sep
613	613, 992	Travis Country Circle	3901	154,219	612D	2	4	C	0.00525	\$ 809.65	\$ 3,238.60	Oct-Dec	Mar-Apr	May-June	July-Sep
615	615	Norman Trail	4641	39,560	642X	3	4	C	0.00525	\$ 207.69	\$ 830.75	Oct-Dec	Mar-Apr	May-June	July-Sep
616	616, 1092	Neenah Avenue	9200	55,875	404Q	2	4	C	0.00525	\$ 293.34	\$ 1,173.38	Oct-Dec	Mar-Apr	May-June	July-Sep
629	629	West Slaughter Lane	6200	44,216	641R	3	4	C	0.00525	\$ 232.13	\$ 928.54	Oct-Dec	Mar-Apr	May-June	July-Sep
640	640	Lord Derby Drive	10605	47,184	703C	1	4	C	0.00525	\$ 247.72	\$ 990.86	Oct-Dec	Mar-Apr	May-June	July-Sep
643	643	Bluffstone Lane	5334	7,433	494L	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
644	644	Midbury Court	11023	73,363	672Z	3	4	C	0.00525	\$ 385.16	\$ 1,540.62	Oct-Dec	Mar-Apr	May-June	July-Sep
646	646	Cuesta Trail	6800	12,269	493P	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
647	647	Harris Branch Parkway	12020	33,675	528B	1	4	C	0.00525	\$ 178.79	\$ 707.18	Oct-Dec	Mar-Apr	May-June	July-Sep
648	648	Harris Branch Parkway	12100	43,943	528B	1	4	C	0.00525	\$ 230.70	\$ 922.80	Oct-Dec	Mar-Apr	May-June	July-Sep
649	649	Wethersby Way	12510	6,017	497A	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
650	650	3201 South 5th Street	3201	2,110	614U	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
653	653	Thaxton Road	8089	16,125	705B	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
663	663	Loyola Lane	6013	29,766	557X	1	4	C	0.00525	\$ 156.27	\$ 625.09	Oct-Dec	Mar-Apr	May-June	July-Sep
664	664	Loyola Lane	6013	6,736	557X	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
665	665	Solera Drive	14905	5,067	404Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
666	666	Alum Rock Drive		180,495	705A	1	4	C	0.00525	\$ 947.60	\$ 3,790.40	Oct-Dec	Mar-Apr	May-June	July-Sep
673	673, 994	Fort Benton Drive	5229	150,655	611H	3	4	C	0.00525	\$ 790.94	\$ 3,163.76	Oct-Dec	Mar-Apr	May-June	July-Sep
674	674, 995	Cobblestone	8225	128,679	614H	3	4	C	0.00525	\$ 675.56	\$ 2,702.26	Oct-Dec	Mar-Apr	May-June	July-Sep
675	675	Racetrack Drive	312	38,410	703G	1	4	C	0.00525	\$ 201.65	\$ 806.61	Oct-Dec	Mar-Apr	May-June	July-Sep
676	676, 1149	Wayne Riddell Loop	11221	169,820	703G	1	4	C	0.00525	\$ 890.51	\$ 3,582.02	Oct-Dec	Mar-Apr	May-June	July-Sep
679	679	Nocturne Cove	9909	11,452	433Z	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
682	682	Rock Harbour Drive		16,740	462R	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
683	683	Tanque Lane	7300	30,916	612D	3	4	C	0.00525	\$ 162.31	\$ 649.24	Oct-Dec	Mar-Apr	May-June	July-Sep
684	684	Doswell Lane	7300	16,803	671A	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
685	685	Spruce Canyon Drive @ High	11600	23,287	671A	3	4	C	0.00525	\$ 122.26	\$ 489.03	Oct-Dec	Mar-Apr	May-June	July-Sep
688	688, 997	Emerald Oaks Drive	12519	71,172	702B	3	4	C	0.00525	\$ 373.65	\$ 1,494.61	Oct-Dec	Mar-Apr	May-June	July-Sep
698	698	Blue Meadow Drive	4705	81,103	674M	1	4	C	0.00525	\$ 425.79	\$ 1,703.16	Oct-Dec	Mar-Apr	May-June	July-Sep
699	699	Twelve Oaks Lane @ South 1st		3,236	614U	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
700	700	Sea Hero Lane	10700	33,388	703C	1	4	C	0.00525	\$ 175.29	\$ 701.15	Oct-Dec	Mar-Apr	May-June	July-Sep
702	702, 1093	William Kennedy Drive	13500	64,366	466B	2	4	C	0.00525	\$ 337.92	\$ 1,351.89	Oct-Dec	Mar-Apr	May-June	July-Sep
703	703	Stephane St John Street	13521	159,171	466F	2	4	C	0.00525	\$ 835.65	\$ 3,342.59	Oct-Dec	Mar-Apr	May-June	July-Sep
704	704	Rosenborough Drive	6500	40,220	675W	1	4	C	0.00525	\$ 211.16	\$ 844.62	Oct-Dec	Mar-Apr	May-June	July-Sep
706	706, 1094	Walkup Lane	7126	129,257	705B	1	4	C	0.00525	\$ 678.60	\$ 2,714.40	Oct-Dec	Mar-Apr	May-June	July-Sep
708	708	Sandifer Street	14109	74,950	618V	1	4	C	0.00525	\$ 393.49	\$ 1,573.95	Oct-Dec	Mar-Apr	May-June	July-Sep
709	709	Daniel Parkway	8421	9,905	462F	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
712	712	Garden View Drive	6302	17,066	587E	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
713	713	Heritage Village Drive	6410	11,968	587E	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
721	720, 721	Mountain Shadows Cove	8814	10,382	611G	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
724	724, 1096	Center Ridge Drive	850	35,062	468R	1	4	C	0.00525	\$ 184.08	\$ 736.30	Oct-Dec	Mar-Apr	May-June	July-Sep

725	725	Center Ridge Drive	701	17,058	466R	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
743	743	Fenton Drive	8709	8,639	611P	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
744	744	Crackling Creek Drive	7605	16,865	611P	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
745	745, 1000	Black Mountain Drive	7405	14,900	611T	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
746	746	Channel Islands Drive	10011	79,761	704A	1	4	C	0.00525	\$ 418.75	\$ 1,674.98	Oct-Dec	Mar-Apr	May-June	July-Sep
747	747	West Slaughter Lane	5800	37,953	642S	3	4	C	0.00525	\$ 189.25	\$ 797.01	Oct-Dec	Mar-Apr	May-June	July-Sep
748	748	York Bridge Circle	5600	14,707	642S	3	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
749	749	Peach Grove Blvd	4400	97,816	645X	1	4	C	0.00525	\$ 513.53	\$ 2,054.14	Oct-Dec	Mar-Apr	May-June	July-Sep
758	758	Amherst Dr.	12000	26,715	465U	2	4	C	0.00525	\$ 140.25	\$ 561.02	Oct-Dec	Mar-Apr	May-June	July-Sep
760	760, 1101	West Rim Drive	7929	36,739	494Y	2	4	C	0.00525	\$ 203.38	\$ 813.52	Oct-Dec	Mar-Apr	May-June	July-Sep
762	762, 1001	Sunset Ridge	5900	197,698	611G	3	4	C	0.00525	\$ 1,037.91	\$ 4,151.66	Oct-Dec	Mar-Apr	May-June	July-Sep
763	763	Timberwood Street		56,855	611U	3	4	C	0.00525	\$ 298.49	\$ 1,193.96	Oct-Dec	Mar-Apr	May-June	July-Sep
765	765	Anderson Mill Road (Dead End)	7720	6,348	435E	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
774	774	Corpus Christi Drive	6700	3,560	435W	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
775	775	Canyon Ridge Drive	300	46,128	496D	1	4	C	0.00525	\$ 242.17	\$ 968.69	Oct-Dec	Mar-Apr	May-June	July-Sep
776	776	Tech Ridge Blvd	12212	23,851	496D	1	4	C	0.00525	\$ 125.22	\$ 500.87	Oct-Dec	Mar-Apr	May-June	July-Sep
786	786, 1104	Davis Oaks Trail	8508	53,635	673F	1	4	C	0.00525	\$ 281.58	\$ 1,126.34	Oct-Dec	Mar-Apr	May-June	July-Sep
788	788	Delta Post Dr.	5100	146,098	619E	1	4	C	0.00525	\$ 767.01	\$ 3,068.08	Oct-Dec	Mar-Apr	May-June	July-Sep
789	789	Via Ricco Drive	6916	71,681	641H	3	4	C	0.00525	\$ 376.33	\$ 1,505.30	Oct-Dec	Mar-Apr	May-June	July-Sep
790	790	Via Corallo Drive	6517	63,558	641H	3	4	C	0.00525	\$ 333.68	\$ 1,334.72	Oct-Dec	Mar-Apr	May-June	July-Sep
792	792	Harris Ridge Blvd	13000	4,989	497A	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
793	793	Harris Ridge Blvd	13100	26,968	467X	1	4	C	0.00525	\$ 141.58	\$ 566.34	Oct-Dec	Mar-Apr	May-June	July-Sep
802	802, 1107	Paffrey Drive	12501	40,821	466J	2	4	C	0.00525	\$ 214.31	\$ 857.24	Oct-Dec	Mar-Apr	May-June	July-Sep
803	803	Apple Orchard Lane	5800	59,634	645U	1	4	C	0.00525	\$ 313.08	\$ 1,252.31	Oct-Dec	Mar-Apr	May-June	July-Sep
806	806	Terravista Drive	7120	24,137	612J	3	4	C	0.00525	\$ 272.73	\$ 1,090.92	Oct-Dec	Mar-Apr	May-June	July-Sep
807	807	Othello Cove	5550	26,490	612J	3	4	C	0.00525	\$ 139.07	\$ 556.29	Oct-Dec	Mar-Apr	May-June	July-Sep
808	808	Savannah Ridge Dr	9807	17,904	463A	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
815	815	Ringsby Cove	7902	36,626	675W	1	4	C	0.00525	\$ 192.29	\$ 769.15	Oct-Dec	Mar-Apr	May-June	July-Sep
816	816, 1110	Silicon	5900	88,831	498X	1	4	C	0.00525	\$ 466.36	\$ 1,865.45	Oct-Dec	Mar-Apr	May-June	July-Sep
820	820	Channel Islands Drive	10401	33,584	704A	1	4	C	0.00525	\$ 176.32	\$ 705.28	Oct-Dec	Mar-Apr	May-June	July-Sep
821	821	Channel Islands Drive	10113	28,973	704A	1	4	C	0.00525	\$ 152.11	\$ 608.43	Oct-Dec	Mar-Apr	May-June	July-Sep
825	825, 1112	Boyd's Way	2000	30,217	672Z	3	4	C	0.00525	\$ 158.64	\$ 634.56	Oct-Dec	Mar-Apr	May-June	July-Sep
826	826	Cherry Creek Drive	5601	2,410	643G	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
827	827	Creek Bend Drive	4805	126,508	675E	1	4	C	0.00525	\$ 664.17	\$ 2,656.67	Oct-Dec	Mar-Apr	May-June	July-Sep
835	835	Loyola Lane	7625	19,823	587D	1	4	C	0.00525	\$ 104.07	\$ 416.28	Oct-Dec	Mar-Apr	May-June	July-Sep
836	836	Loyola Lane	8089	21,672	587D	1	4	C	0.00525	\$ 113.78	\$ 455.11	Oct-Dec	Mar-Apr	May-June	July-Sep
837	837	Loyola Lane	8093	11,814	587D	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
839	839, 1113	Angel Oak St	312	36,295	673Z	1	4	C	0.00525	\$ 190.55	\$ 762.20	Oct-Dec	Mar-Apr	May-June	July-Sep
841	841	Bonnetbrook Dr	7409	31,508	612J	3	4	C	0.00525	\$ 165.42	\$ 661.67	Oct-Dec	Mar-Apr	May-June	July-Sep
947	947	E. William Cannon (Pond # 1)	5404	17,628	675J	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
948	948	E. William Cannon (Pond # 2)	5600	27,455	675J	1	4	C	0.00525	\$ 144.14	\$ 576.56	Oct-Dec	Mar-Apr	May-June	July-Sep
949	949	E. William Cannon (Pond # 3)	6224	46,875	675J	1	4	C	0.00525	\$ 246.09	\$ 984.38	Oct-Dec	Mar-Apr	May-June	July-Sep
950	950	E. William Cannon (Pond # 4)	6500	20,821	675T	1	4	C	0.00525	\$ 108.26	\$ 433.04	Oct-Dec	Mar-Apr	May-June	July-Sep
960	960	W. Dittmar Road	1104	55,325	673C	1	4	C	0.00525	\$ 290.46	\$ 1,161.83	Oct-Dec	Mar-Apr	May-June	July-Sep
961	961	W. Dittmar Road	707	26,993	673C	1	4	C	0.00525	\$ 141.71	\$ 566.85	Oct-Dec	Mar-Apr	May-June	July-Sep
965	965	South First Street	10000	61,070	673Z	1	4	C	0.00525	\$ 320.62	\$ 1,282.47	Oct-Dec	Mar-Apr	May-June	July-Sep
966	966	South First Street	10400	38,122	703D	1	4	C	0.00525	\$ 200.14	\$ 800.56	Oct-Dec	Mar-Apr	May-June	July-Sep

967	967	South First Street	11000	34,545	703G	1	4	C	0.00525	\$ 181.36	\$ 725.45	Oct-Dec	Mar-Apr	May-June	July-Sep
968	968	Loyola Lane	5700	30,450	557W	1	4	C	0.00525	\$ 159.86	\$ 639.45	Oct-Dec	Mar-Apr	May-June	July-Sep
969	969	Parmer Lane	1300	41,523	466U	1	4	C	0.00525	\$ 218.00	\$ 871.98	Oct-Dec	Mar-Apr	May-June	July-Sep
1012	1012	Lone Pine	10316	122,999	704L	1	4	C	0.00525	\$ 645.74	\$ 2,582.98	Oct-Dec	Mar-Apr	May-June	July-Sep
1013	1013	Andreas Woods Cv	2515	13,254	674L	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1015	1015	Georgia Coleman	2618	61,049	702C	3	4	C	0.00525	\$ 320.51	\$ 1,282.03	Oct-Dec	Mar-Apr	May-June	July-Sep
1016	1016	Frontier Valley		20,117	616X	1	4	C	0.00525	\$ 105.61	\$ 422.48	Oct-Dec	Mar-Apr	May-June	July-Sep
1019	1019, 1020	Saint Thomas	12813	40,028	678J	1	4	C	0.00525	\$ 210.15	\$ 840.59	Oct-Dec	Mar-Apr	May-June	July-Sep
1025	1025	Rydalwater	11806	1,697	528F	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1026	1026, 1027	Villa Avenida	6924	100,719	616X	1	4	C	0.00525	\$ 528.77	\$ 2,115.10	Oct-Dec	Mar-Apr	May-June	July-Sep
1029	1029, 1030	Krueger Lane	5207	264,619	586H	1	4	C	0.00525	\$ 1,389.25	\$ 5,557.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1042.1	1042.1	Marc Taylor	702	103,487	673D	1	4	C	0.00525	\$ 543.31	\$ 2,173.23	Oct-Dec	Mar-Apr	May-June	July-Sep
1049	1049	E Howard Ln	3520	62,242	498J	1	4	C	0.00525	\$ 326.77	\$ 1,307.08	Oct-Dec	Mar-Apr	May-June	July-Sep
1061	1061, 1062	Devonshire Dr.	2510	51,549	556Q	1	4	C	0.00525	\$ 270.63	\$ 1,082.53	Oct-Dec	Mar-Apr	May-June	July-Sep
1063	1063, 1064	Chick Pea Ln	8309	100,209	674J	1	4	C	0.00525	\$ 526.10	\$ 2,104.39	Oct-Dec	Mar-Apr	May-June	July-Sep
1071	1071, 1072	McNeil Dr	9401	32,615	493E	2	4	C	0.00525	\$ 171.23	\$ 684.92	Oct-Dec	Mar-Apr	May-June	July-Sep
1076	1076	Neenah Ave	9813	166,652	404Q	2	4	C	0.00525	\$ 874.92	\$ 3,499.69	Oct-Dec	Mar-Apr	May-June	July-Sep
1134	1134	Little Texas Ln	101	5,236	644T	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1141	1141, 1142	Hartley Cv	11829	80,259	703E	3	4	C	0.00525	\$ 421.36	\$ 1,685.44	Oct-Dec	Mar-Apr	May-June	July-Sep
1427	1427	Lincolnshire	12061	33,959	496B	1	4	A1	0.02100	\$ 713.14	\$ 2,852.56	Oct-Dec	Mar-Apr	May-June	July-Sep
1428	1428	Lincolnshire	12017	46,467	496B	1	4	A1	0.02100	\$ 975.81	\$ 3,903.23	Oct-Dec	Mar-Apr	May-June	July-Sep
1429	1429	Avery Ranch Blvd	12913	12,913	403Q	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1430	1430	Anderson Mill Road	11000	12,456	433T	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1432	1432	Locke Ln	3306	99,835	614T	1	4	C	0.00525	\$ 524.13	\$ 2,096.54	Oct-Dec	Mar-Apr	May-June	July-Sep
1444	1444	E Yager Ln	304	16,615	496D	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1453	1453	River St	600	4,335	615A	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1457	1457, 1458	Bair Way	1101	24,881	614T	1	4	C	0.00525	\$ 257.97	\$ 1,031.88	Oct-Dec	Mar-Apr	May-June	July-Sep
1459	1459	Corbin Ln	2801	13,899	614P	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1462	1462, 1463	Adair Rd.	5500	19,573	528A	1	4	C	0.00525	\$ 102.76	\$ 411.03	Oct-Dec	Mar-Apr	May-June	July-Sep
1464	1464, 1465	Adair Rd	5716	51,029	528A	1	4	C	0.00525	\$ 267.90	\$ 1,071.61	Oct-Dec	Mar-Apr	May-June	July-Sep
1468	1468	Texas Plume	7804	17,227	464K	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
1478	1478	Kieberg Trail	5504	8,522	704L	1	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
384406	384406, 384419	Warehouse Row	3900	91,493	644D	1	4	C	0.00525	\$ 480.34	\$ 1,921.35	Oct-Dec	Mar-Apr	May-June	July-Sep
C05128	C05128	Iridens Court	11604	4,968	464B	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep
C61250	C061250	Dafton Lane	5501	457,653	524A	1	4	C	0.00525	\$ 2,402.68	\$ 9,610.71	Oct-Dec	Mar-Apr	May-June	July-Sep
C07198	C07198	Taylor Chaise Cr	8705	12,470	434L	2	4	C	0.00525	\$ 100.00	\$ 400.00	Oct-Dec	Mar-Apr	May-June	July-Sep

18,975,487 Sq Ft

\$ 110,648.85 \$ 437,035.80

EXHIBIT C SCOPE OF WORK

1.0 SCOPE OF WORK

- 1.1 The City has approximately 64 miles of open waterways within the City's Full Purpose Jurisdiction ("FPJ") that require vegetation control. Highest priority waterways shall be cleared of excess vegetation to optimize flood flow conveyance at least one (1) time each year during the term of the Contract, weather permitting.
- 1.2 The City also has approximately 543 detention and water quality pond locations within Austin's FPJ that require vegetation control. These ponds shall be cleared of excess vegetation to maximize the storm water holding capacity and optimizing water quality prior to discharge downstream. The ponds shall be maintained at least three (3) times per year during the term of the Contract, weather permitting.

2.0 APPLICABLE SPECIFICATIONS

- 2.1 American National Standards Institute ("ANSI") A300, "Standard Practices for Trees, Shrubs and Other Woody Plant Maintenance"
- 2.2 ANSI Z133.1, "Pruning, Trimming, Repairing, Maintaining and Removing Trees, and Cutting Brush - Safety Requirements"
- 2.3 Environmental Criteria Manual, Section 1.6.3 Maintenance and Construction Requirements, **Exhibit "D"**.
- 2.4 Performance of work shall be in accordance with industry standards: Texas Nursery and Landscape Association's ("TNLA") Texas Certified Landscape Professional Manual.
- 2.5 All of the Contractor's operations shall comply with the City's "IPM Plan Maintenance Guidelines":

<http://www.ci.austin.tx.us/growgreen/ipm.htm>
- 2.6 Any material, method, or procedure specified by reference to a specific standard or specification, such as a commercial standard, Federal or state specification, industry or government code, trade association code or standard, or other similar standard, shall comply with the requirements in the latest revision thereof and any amendments or supplements thereto in effect during the term of this Contract. The code, specification, or standard referred to, except as modified in this specification, shall have full force and effect as though it were a part of this Contract.
- 2.7 All of the Contractor's operations shall comply with all Federal, state, and county laws or regulations, and applicable ordinances of the City, including all safety and environmental laws.

3.0 HERBICIDE APPLICATION

- 3.1 The Performing Party's pesticide/herbicide actions shall conform to City Standard, Special and Provision Specification SP608S.4J, **Attachment "A"**.
- 3.2 Applications of chemicals shall be made under the on-site supervision of a Licensed Pesticide Applicator currently certified by the State of Texas Structural Pest Control Board.
 - 3.2.1 Performing Party shall provide copies of certifications of their current licensed employee(s) to the City with their bid submittal.
 - 3.2.2 If the licensed employee(s) leave Performing Party employment, no herbicide application may be performed until the City approves in writing the licensed replacement(s).

- 3.3 All label precautions shall be adhered to, including limiting drift to non-target plants, both terrestrial and aquatic. Performing Party shall follow the guidelines listed in 609S.6, SP608, and SP609S also in **Attachment "A"**.

4.0 GENERAL REQUIREMENTS

- 4.1 Unless otherwise provided herein or agreed in writing in advance by the City, Contractor and Performing Party shall provide and pay for all materials, equipment, labor, transportation, machinery, tools (including those necessary to make minor repairs and adjustments at the work site, and those necessary to clean-up the work site), fuel, telephone, power, and all other things necessary to perform the work in accordance with this Contract.
- 4.2 Performing Party shall avoid unnecessary interference with concurrent activities of other vendors and City staff at the work site. Performing Party shall not interfere with the use of public and private roads, and shall provide and maintain suitable detours or other temporary expedients if required by City Code. Performing Party shall conduct the work in such a manner as to avoid unnecessary noise and other disturbance, and shall fully cooperate with other occupants of the premises.
- 4.3 Some of the work areas are sloped, with a significant grade, or on uneven terrain that may be difficult to access with large mechanical equipment. In this case, the required work may be accomplished using the following equipment:
- 4.3.1 Hand-held manual tools or saws;
 - 4.3.2 Weed eaters;
 - 4.3.3 Manual, push type, or riding mowers;
 - 4.3.4 Small tractors equipped with mowing and/or raking attachments; or
 - 4.3.5 Any woody vegetation removal on the slope of any embankments shall be limited to hand held equipment.
- 4.4 Performing Party shall protect all desirable vegetative growth such as trees, shrubs and wood vines from damage, injury or loss.
- 4.5 Vegetative clippings can be left on site, evenly distributed in stream channels and in and around pond basins. Clippings spread unevenly or in a layer that is so thick they obstruct new growth shall be removed or thinned to prevent the creation of any non-vegetated areas and resulting erosion.

5.0 PERFORMANCE SPECIFICATIONS

- 5.1 Performing Party's work shall include but not be limited to:
- 5.1.1 Mowing and mulching the designated vegetation;
 - 5.1.2 Removal of undesirable trees and noxious weeds, and treatment of the stumps and cut stems; and
 - 5.1.3 Debris, trimmings, trash and litter (including old tires) removal.
- 5.2 Prior to mowing, the Performing Party shall remove all trash/debris and dispose of it properly at an accredited landfill or other facility approved in advance by the City. It is anticipated that such debris will have a minor presence only. If the Performing Party discovers larger trash/debris (e.g., couch), they shall immediately contact the City to make arrangements for its removal. If a dead animal is discovered, the Performing Party shall notify the City's "311" call center to arrange for its removal.
- 5.3 Creek Sub-Groups – All sites have one of the following categories assigned to it.

- 5.3.1 **"A"**: No Mowing is allowed. Manually clear all woody plants (2" or less in diameter) and ragweed from the stream channel, or mulch and evenly distribute above bankfull, as shown in **Attachment "B"**.
- 5.3.2 **"B"**: Mow stream channel no lower than 12 inches (or lower as may be directed by City, but never lower than 6 inches.)
- 5.3.3 **"C"**: Mow only outside of stream channel, and to a height no lower than 6 inches, preserving native restoration efforts commonly indicated with flagging or fencing.
- 5.3.4 **"D"**: Manually clear all woody plants from the stream channel, mow to a height no lower than 6 inches only outside of stream channel (aesthetic mowing.)
- 5.3.5 **"E"**: Mow extent of flag boundaries no lower than 12 inches, except for the 10 foot buffer around the Right of Way that shall be mowed to no lower than 3 inches.
- 5.3.6 **"F"**: Pick up trash only. If a large accumulation of trash/debris or large limbs are present, contact the City for instructions.

5.4 Creek Requirements, Specific

- 5.4.1 Trees and shrubs outside the waterway flow line shall not be cut or damaged.
- 5.4.2 Mowing in waterways shall primarily occur between March 15th and November 15th from one (1) to three (3) times annually depending on growth rate and height of vegetation. If mowed more than once, there shall be at least sixty (60) calendar days between mowing events to allow recovery of perennial plant communities. **See Exhibit "A"**.

5.5 Pond Requirements, Specific

- 5.5.1 In turfgrass areas, Performing Party shall mow or weed eat vegetation to a height no lower than 4 inches.
- 5.5.2 Cut vegetation shall be mulched down to a size of 2 inches or less in "water quality" ponds.
- 5.5.3 **No equipment other than hand-held equipment (i.e. weed eaters) shall enter into any saturated areas.**
- 5.5.4 Mowing in ponds shall occur per the schedule in **Exhibit "B"**.
- 5.6 When access to a work site is affected, overhanging limbs of desirable woody vegetation greater than 8 inches in diameter shall be pruned to raise the canopy up to approximately 10 feet above the ground. All trimming shall be done in such a manner that does not endanger the life of such trees. Pruning shall not exceed 20% of a tree's crown at one time.
- 5.7 Tall and Medium Herbaceous Plants: **trimming shall not impinge on the growing tips (basal crown) of bunchgrasses. Cutting these grasses below the basal crown will severely stress and likely kill them.** These plants shall only be cut in late winter and to a height no lower than 18 inches from the ground.
- 5.8 Invasive Woody Vegetation:
- 5.8.1 Woody Vegetation defined:
- Woody plants, small: plants with a stem diameter less than two (2) inches that commonly develop wood inside the stem and bark on the outside. These are usually trees and shrubs though can be large herbaceous plants.

- **Woody plants, large:** plants with a stem diameter greater than two (2) inches that develop wood inside the stem and bark on the outside. These are usually trees and shrubs.

5.8.2 Prolific woody plants, such as the Willow tree that typically colonize the perimeter of ponds, shall be removed to prevent any potential future impact on the pond liner. Refer to **Table 1** below for a partial list of woody plants that invade ponds. If the trees are small, they shall be removed by the roots.

Table 1. – Woody Plant Weed List

Common Name	Botanical Name	Weed Type
Ash	Fraxinus spp.	Pond-edge tree
Chinaberry	Melia azedarach	Pond-edge tree
Chinese Tallow	Sapium sebiferum	Pond-edge tree
Cottonwood	Populus deltoides	Pond-edge tree
Giant Cane	Arundo donax	Tall woody grass
Mulberry	Morus spp.	Pond-edge tree
Poison Ivy	Toxicodendron radicans	Woody vine
Rough-leaf Dogwood	Cornus Drummondii	Pond-edge tree
Willow	Salix nigra	Pond-edge tree

- 5.8.3 Performing Party shall remove undesirable woody vegetation and trees less than eight (8) inches in diameter (measured at 4-1/2 feet above grade), and saplings. Woody vegetation between two (2) and eight (8) inches diameter shall be cut flush with ground, and the stump and cut stems shall be treated with an herbicide to prevent re-sprouting.
- 5.8.4 A tool similar to the discontinued Tree Wrench (or Weed Wrench) is an effective way to remove trees less than two (2) inches in diameter without the use of chemicals. This tool is most effective when there is a hard surface against which the operator can gain leverage. Using some type of support in wet soils will help. Do not use the Tree Wrench when the vegetation is growing within five (5) feet of a concrete structure or any other permanent structure that does not allow proper leverage to use the tree wrench, and/or may damage the permanent structure. In these cases, cut the woody vegetation flush with ground and treat the stump immediately.
- 5.8.5 If physical removal of weed trees is impractical, an herbicide may be necessary. To minimize the amount of chemical needed, cut off the top of the tree and treat the stump to prevent re-sprouting.
- 5.9 Within two (2) days after receiving notification that the City has cut down a tree greater than 8 inches in diameter (measured at 4-1/2 feet above grade), the Performing Party shall either mulch the remains on site or dispose of them at a City-approved site. The stump may be treated at the discretion of the City.
- 5.10 Soil in the work areas shall not be disturbed unless the activities necessary to accomplish the desired work warrant such action and previous authorization has been obtained from the City. Any work that disturbs the existing condition of the soil shall conform to the re-vegetation requirements of the City.
- 5.11 Do not mow for at least 24 hours after rain greater than ½ inch or when the ground is muddy or soft. To prevent tire indentations from occurring, **Performing Party shall not enter any saturated area with any equipment heavier than weed-eaters.** Use of heavier equipment will cause ruts, compaction, and subsequent erosion, resulting in sizeable repair expenses. The City reserves the right to seek remedy from the Performing Party for full reimbursement of the cost to rehabilitate any area so damaged by Contractor.
- 5.12 Performing Party shall provide proof that clippings, brush and/or trash are being disposed of in an appropriate manner. If the material is disposed to in a landfill, the Performing Party shall attach the

receipt(s) to the appropriate invoice. If organic materials are disposed of at a compost site managed by the Performing Party, this site shall be made available for periodic City inspection.

5.13 Photos and Inspections

At arrival and upon completion of each location, the Performing Party shall take "before" and "after" digital photos of the site that clearly show the work accomplished, and provide the photos electronically to the City at least a week prior to issuance of an invoice. Photos shall include a date and time stamp.

5.13.1 No open waterway or pond shall be reported by the Performing Party as cleared, until all work in the given area is completed in accordance with this specification. **Work will not be considered by the City to be complete nor will payment be authorized until before and after photos are provided to the City that adequately show the work was completed.** Only as a last resort will the City be required to physically inspect completion of work.

5.13.2 If the photos reveal that work has not been completed, the Performing Party shall finish the uncompleted work within one week of notification, and then provide the City with new photos.

5.13.3 The City may request additional photos if it is unable to determine the extent of the work accomplished from the photos submitted by Performing.

5.14 Public Notification

5.14.1 At the discretion of the City, affected stakeholders shall be notified by Contractor at least 48 hours in advance of impending herbicide treatment in creeks and ponds. Performing Party shall provide and use ground signs, and door hangers where appropriate. The City will provide the Performing Party with the door hanger templates given a minimum of 2 week notice.

5.14.2 When required by the City's Program Manager, the Performing Party shall verify that such notification has been performed.

6.0 SAFETY

6.1 Performing Party shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. Performing Party shall take all necessary precautions for safety, and shall provide the required protection to prevent damage, injury or loss to all persons and property that may be affected by the work.

6.2 Performing Party shall comply with all applicable Federal, state and local laws and regulations intended to protect the safety of persons or property, including but not limited to all applicable OSHA and ANSI Z133 standards, rules and regulations. Performing Party shall erect and maintain all necessary safeguards for such safety and protection. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Performing Party, shall be remedied by the Performing Party to the City's satisfaction.

6.3 Upon City written request, the Performing Party shall prepare and deliver to the City a safety work plan to be used by the Performing Party.

6.4 Performing Party shall designate a qualified and experienced Safety Representative at each work site whose duties and responsibilities shall be the prevention of accidents and the maintenance and supervision of safety precautions and programs. Upon written request of City, the Performing Party shall provide certifications or other documentation of the safety representative's qualifications.

6.5 Performing Party shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employees at the site in accordance with laws and regulations.

- 6.6 In emergencies affecting the safety or protection of persons or the work at the site or adjacent thereto, Performing Party, without special instruction or authorization from the City, shall promptly and reasonably act to prevent damage, injury, or loss and to mitigate damage or loss to the work.
- 6.7 If there is an accident involving injury to any individual on or near the work, the Performing Party shall notify the City immediately by phone or radio of the incident after insuring the safety of the Contractor's workers and any other affected parties. The Performing Party shall be responsible for recording the location of the event and the circumstances surrounding the event through photographs, interviewing witnesses, obtaining medical reports and other documentation that describes the event. Copies of such documentation shall be provided to the City within forty-eight (48) hours of the event.
- 6.8 If there is an accident that causes damage to City property or any third party property, the Performing Party shall notify the City by phone or radio of the damage immediately after insuring the safety of the Performing Party's workers. This verbal notification shall be followed up within five working days of the incident with written notification and investigation of the incident, including any disciplinary actions.

7.0 PERFORMING PARTY'S PERSONNEL

- 7.1 Performing Party employees shall wear proper safety vests, protective hats and glasses, and any other OSHA required safety equipment.
- 7.2 Performing Party shall satisfy the City that the Performing Party has the number of employees necessary to satisfactorily perform the work according to the schedule.
- 7.3 Performing Party's on-site supervisor/crew leader shall speak, read and write English. Supervisor shall report any problems or concerns directly to the City.
- 7.4 All crewmembers shall be adequately trained, and at all times supervised by the supervisor/crew leader.
- 7.5 Performing Party's employees shall at all times be clearly identified and uniformed, and Performing Party shall furnish each employee with proper identification giving both the names of the Performing Party and the employee. Such identification shall be marked on an outer garment, or worn on the outer garment.
- 7.6 The City has the right to remove any employee whose conduct is improper, inappropriate, or offensive and this employee shall not return to the City's job-site without written approval by the City.

8.0 PERFORMING PARTY REQUIREMENTS

- 8.1 The Performing Party shall provide adequate supervisory personnel experienced in vegetation control services to insure that all work shall be done in accordance with this agreement and generally accepted practices of vegetation control. All personnel performing under this Contract shall be direct employees of the Performing Party.
- 8.2 Performing Party shall provide all labor, parts, equipment, materials, tools, supervision and transportation required to successfully perform the services described herein.
- 8.3 All equipment utilized by the Performing Party to perform the work shall be maintained in good operating condition at all times. All safety devices required by OSHA, Federal, state, or local guidelines shall be in place and in proper operating condition. All gasoline cans shall be OSHA approved.
- 8.4 The City reserves the right to inspect the Performing Party's equipment at any time during the Contract term. Any equipment deemed unacceptable by the City for failures that include, but not limited to, continuous equipment malfunctions, excessive noise, unacceptable emissions, and leaking or spillage, shall be replaced at the Performing Party's expense prior to beginning work at the next scheduled site. Failure to provide suitable equipment for completing each visit within the required

schedule may be grounds for termination of this contract. The Performing Party's equipment shall not be stored on City property at any time.

- 8.5 Performing Party shall make every effort to position and operate equipment such that cuttings and debris picked up by rotating assemblies is directed away from nearby vehicles and buildings. The Performing Party shall ensure that cut grass does not remain against fences, buildings, walls, or nearby vehicles.
- 8.6 **IMMEDIATELY** upon discovery of suspected hazardous waste spills or any hazardous situation, condition, or structure the Performing Party shall contact the **City's Spills & Complaints Program at (512) 974-2550.**
- 8.7 Performing Party shall properly dispose of used and contaminated lubricants, packaging materials, and filters. Costs for disposal fees may be included in the cost of the services bid and not charged separately on an invoice. The Performing party shall provide the City, upon request, an affidavit declaring that all used and contaminated lubricants and filters were properly disposed.
- 8.8 Performing Party shall designate at least one (1) person within their firm as a single point of contact (SPOC) with office phone, cell phone, and/or pager number for accessibility. The SPOC shall be able to speak, read and write English. SPOC shall return City phone calls within one (1) hour of receipt during business hours.

9.0 SCHEDULE AND WORK HOURS

- 9.1 Performing Party shall begin work at or around October 1 of the annual Contract term, and according to the schedules presented in **Exhibit A and Exhibit B.**
- 29.2 All work shall cease two weeks prior to the end of the annual Contract term, to ensure that all correct invoices will be received by the City no later than October 7.
- 9.3 Work shall be performed Monday through Friday, 8:00am to 4:00pm, excluding City Holidays. No work shall be performed after hours or on weekends without prior written approval by the City.

11.0 ERRORS OR AMBIGUITIES

The Performing Party shall report any errors or ambiguities in these specifications or any work order or assignment to the City as soon as detected. The City shall issue a clarification or interpretation that shall be definitive.

ATTACHMENT "A"

**City Standard, Special, and Provision Specifications
(187 pages including cover page)**

ATTACHMENT "B"



EXHIBIT D
ENVIRONMENTAL CRITERIA MANUAL

Maintenance and Construction Requirements

- A. **Maintenance Responsibilities.** Proper maintenance is as important as engineering design and construction in order to ensure that water quality controls will function effectively. Section 25-8-231 of the Land Development Code requires maintenance be performed on water quality control facilities when necessary as defined by this section.

Water quality controls required for commercial and multi-family development shall be maintained by the property owner.

Water quality control facilities for single family or duplex residential development shall be maintained by the City of Austin once the facilities have been released by the City, unless otherwise determined during the review process. For the City to release a water quality control facility, the facility shall:

1. be constructed per the approved development plan;
2. meet all applicable requirements of 1.6.3 B, 1.6.3 C of the ECM and 1.2.4 E of the DCM;
3. complete a one-year warranty period, including the completion of all maintenance and rehabilitation activities identified by the Watershed Protection Department; and
4. obtain final warranty release approval from the Watershed Protection Department.

The City will also maintain water quality control facilities designed to service primarily publicly owned roads and facilities. These water quality control facilities shall be designed and built according to the appropriate City standards.

- B. **Maintenance Requirements-Design and Construction.** The design of drainage facilities (including but not limited to headwalls, open channels, storm sewers, area inlets, and detention, retention and water quality controls and their appurtenances) shall comply with the requirements of Section 1.2.4.E of the Drainage Criteria Manual. In addition, drainage facilities shall comply with the following construction requirements:

1. Drainage or drainage access easements on side lot lines shall be located adjacent to a property line and not centered on a property line.
2. Points of access to water quality facilities shall have a standard City of Austin residential concrete driveway approach and curb cut on the abutting street. A pipe gate is required at the end of the driveway at the ROW limits. See Figure 8-8 of the Drainage Criteria Manual for details.
3. Retention and water quality facilities shall have a staging area not less than eight-hundred (800) square feet in area if the storage volume of the pond exceeds two-thousand (2,000) cubic feet. The staging area shall be located adjacent to the detention, retention or water quality facility, and access drive and be within an access easement. The staging area may be cleared, graded and re-vegetated, with slopes not exceeding ten (10) percent in any direction.
4. All pond bottoms, side slopes, and earthen embankments shall be compacted to ninety-five (95) percent of maximum density in accordance with COA Standard Specifications. Side slopes for earthen embankments shall not exceed three to one (3H:1V). Rock slopes may exceed these limits if a geotechnical report warrants a deviation. Actual field conditions may override the geotechnical report. Concrete walls shall be built to COA Standard Specifications. Expansion joints on free standing walls shall have water tight seals as needed. Earthen pond and channel bottoms shall have slopes greater than two (2) percent.
5. Free-standing structural walls/facilities located on or adjacent to a residential lot shall not be greater than six feet in height.
6. Refer to the Drainage Criteria Manual for additional safety criteria for storm water management facilities, including water quality facilities and storm water management infrastructure.

7. Sediment removed during construction of a detention, retention, or water quality facilities may be disposed of on-site if properly stabilized according to the practices outlined in the erosion and sedimentation control criteria found in Section 1.4.0 of this manual. After the City of Austin has accepted a storm water facility disposal of sediment shall be at an approved landfill.
8. The temporary erosion and sedimentation control plan shall be configured to permit construction of detention, retention or water quality facilities while maintaining erosion and sedimentation control.
9. If runoff is to enter the sand filtration chamber of a water quality control facility prior to completion of site construction and re-vegetation, inspection and maintenance of all temporary erosion/sedimentation controls are required, as described in the Environmental Criteria Manual Section 1.4.1.2.E.3, to prevent heavy sediment loads caused by home construction from clogging the filtration media.
10. In all cases, trees shall be preserved according to the requirements of Section 3 of the Environmental Criteria Manual. The access drive and staging area shall be designed to preserve trees 8" (inches) in diameter and greater to the maximum extent possible. Trees 8" in diameter and larger shall be surveyed and shown for the proposed access easement at the time of construction plan permitting.
11. For filtration systems the design media depth shall be verified, accounting for consolidation. If insufficient depth is present, additional media shall be added and pre-soaked until the design depth is achieved. Pre-soaking- apply 5-10 gallons of water per square foot of media area within one hour.
12. For water quality treatment systems that utilize vegetation (vegetated sedimentation basin or sediment chamber, retention/irrigation, vegetative filter strip, bio-filtration, rainwater harvesting, non-required vegetation, rain garden) a minimum of 95% of the vegetation shall be alive and viable. No bare areas greater than 10 square foot may exist. For ponds these performance requirements apply to the entire pond area including the pond bottom, side slopes, and areas adjacent to the pond.
13. Bio-filtration media certification, on-site storage, and installation - see Sequence of Construction requirements in 1.6.3.C.6.

C. Major Maintenance Requirements.

1. Sedimentation and Filtration (See Section 1.6.5).
 - a. Silt should be removed when the accumulation exceeds six (6) inches in sediment basins without sediment traps. In basins with sediment traps, removal of silt shall occur when the accumulation exceeds four (4) inches in the basins, and the sediment traps shall be cleaned when full. Following silt removal the design depth of the filtration media shall be verified (see 1.6.3.8.11).
 - b. Accumulated paper, trash and debris should be removed every six (6) months or more often as necessary to maintain proper operation.
 - c. Vegetation within the basin shall not exceed eighteen (18) inches in height at any time, except as called for in the design. The minimum vegetation height shall be three (3) inches. Vegetation that is mowed or cut shall be removed from the basin.
 - d. The basin shall be inspected annually and repairs shall be made if necessary.
 - e. Corrective maintenance is required any time a sedimentation basin does not drain the equivalent of the Water Quality Volume within sixty (60) hours (i.e., no standing water is allowed).
 - f. Corrective maintenance is required any time the sediment trap in a sedimentation basin does not drain completely within ninety-six (96) hours (i.e., no standing water is allowed).
 - g. To limit erosion, no un-vegetated area shall exceed 10 square feet.
 - h. Structural integrity of basins shall be maintained at all times.
2. Detention Basin

- a. Accumulated paper, trash and debris should be removed every six (6) months or as necessary.
- b. Vegetation within the basin shall not exceed eighteen (18) inches in height at any time.
- c. Corrective maintenance is required any time draw-down does not occur within twenty-four (24) hours.
- d. The basin should be inspected annually and repairs should be made if necessary.
- e. In detention basins, silt shall be removed and the basin restored to original lines and grades when standing water conditions occur or the basin storage volume is reduced by more than 10%.
- f. to limit erosion, no un-vegetated area shall exceed 10 square feet.
- g. structural integrity of basins shall be maintained at all times.

3. Wet Ponds

Due to the nature of wet ponds being full of water when in operation, the need for maintenance is not easily visible. However, when the ponds are built in stable upland areas, the need for maintenance of these ponds should be infrequent. An approved Integrated Pest Management Plan with a recorded Restrictive covenant is required. Accumulation of sediment in the basin is the primary reason the pond will require intensive maintenance. Because of this, very careful attention should be paid to adequate, well-maintained erosion and sedimentation controls in the contributing drainage area during construction. This, in combination with the sediment forebay, should prevent the requirement of maintenance of the main pool soon after the pond is put online. The following are guidelines for pond maintenance:

During Site Construction - The sediment load to the sediment forebay shall be closely monitored after every storm event. If heavy sediment loads are detected during an inspection, the source should be corrected. Sediment shall be removed from the sediment forebay when one-third of the forebay volume is lost.

Upon Completion of Site Revegetation- Any sediment build-up (greater than 5% volume loss) shall be removed from the forebay upon completion of site revegetation. The sediment build-up in the main pool shall be checked and if more the ten- percent of the volume is lost, it should be cleaned at that time.

Every Three Months for the First Two Years - During the three month initial inspection cycle, if more than fifteen percent of the volume of the forebay is lost, it shall be cleaned at that time.

Every Three Months- Turf areas around the pond should be mowed. Accumulated paper, trash, and debris shall be removed every three months or as necessary. Cattails, cottonwoods, and willows can quickly colonize shallow water and the edge of the pond. These species, or any areas of plant overgrowth may be thinned at this time or as needed.

Annually - The basin should be inspected annually for side slope erosion and deterioration or damage to the structural elements. Any damage shall be repaired. Large areas, which have dead or missing vegetation, shall be replanted.

Every Three Years - The sediment build-up in the sediment forebay shall be checked. The sediment forebay shall be cleaned if more than one-third of the forebay volume is lost.

Every Six Years- The sediment build-up in the main pool shall be checked. Sediment shall be removed from the main pool when twenty percent of the main pool volume is lost.

4. Retention-Irrigation Systems

- a. Sediment shall be removed from the retention basin, splitter box and wet wells, when accumulations exceed six (6) inches in depth.
- b. To the greatest extent practicable, irrigation areas are to remain in their natural state. However, vegetation shall be maintained in the irrigation area such that it does not impede the spray of water from the irrigation heads. Tree and shrub trimmings and other large debris shall be removed from the irrigation area in order to harvest and remove nutrients from the system.
- c. The pumps and irrigation system shall be inspected or tested a minimum of six (6) times per year to show all components are operating as intended. In particular, sprinkler heads shall be checked to determine if any are broken, clogged, or not spraying properly. All inspection and testing reports shall be kept on site and accessible to the City of Austin.

5. Vegetative Filter Strip, Including Disconnection of Impervious Cover

Filter strips shall be managed so that a dense, healthy vegetative cover is preserved. Once established, filter strips using native grasses shall be maintained without pesticides and fertilizers. Turf grass filter strips may be managed with a minimal amount of irrigation and fertilization (not more than 1 lb. of nitrogen per 1,000 square feet per year) however no herbicides or pesticides shall be applied.

Un-mowed vegetative filter strips are preferred. If mowed the cutting height shall be set to 3-6 inches for turf grass and a minimum of 18" for bunchgrass, and grass clippings, which are easily washed out by runoff, shall be removed from the VFS in order to prevent export of nutrients.

Bare spots and areas of erosion identified during inspections shall be replanted and restored to meet specification. If sediment accumulates on the vegetative filter strip then it shall be removed. Any disturbance to the filter strip as a result of maintenance procedures (or other reasons) shall be repaired, including re-establishment of the vegetation.

Other items:

- a. Silt should be removed when the accumulation covers more than 10 square feet of VFS area.
 - b. Accumulated paper, trash and debris should be removed every six (6) months or more often as necessary to maintain proper operations.
 - c. Vegetative cover shall be at least 95%, with no un-vegetated area exceeding ten (10) square feet, and no evidence of erosion.
 - d. There is no evidence of preferential flow paths around or through the VFS (e.g., upstream "lip" is silted in or installed too low).
 - e. The level spreaders shall be repaired if damaged or not functioning correctly.
 - f. The VFS shall be inspected annually and repairs shall be made if necessary.
 - g. An approved Integrated Pest Management (IPM) Plan is required.
6. Bio-filtration and Rain Gardens

Once vegetation is established, bio-filtration systems should require less maintenance than sand filtration systems because the vegetation protects the filtration media from surface crusting and sediment clogging. Plant roots also provide a pathway for water to permeate down into the media, thus further enhancing the hydraulic performance of the system. Unless damaged by unusual sediment loads, high flows, or vandalism, the biofiltration media should be left undisturbed and allowed to age naturally.

Performance Requirements.

A minimum of 95% of the vegetation shall be alive and viable for one year following installation. No bare areas greater than 10 square foot may exist. These performance requirements apply to the entire pond including the pond bottom, side slopes, and areas adjacent to the pond.

Landscape Maintenance: A lack of maintenance considerations in the design of a landscape commonly results in a site that is more maintenance intensive (i.e., costly) than necessary and/or appropriate for its purpose, and one that requires the routine use of practices that are undesirable (e.g., extensive pesticide use, intensive pruning of plants that grow too large for the spaces they occupy). It is important that the designer include maintenance considerations and IPM throughout the planning and design phase of a bio-filtration project. To the extent possible, these criteria are designed to minimize the potential for pests and the amount of maintenance required for the bio-filtration pond. Landscapes should be designed to allow for the access and aid the maneuverability of maintenance equipment (e.g., if areas of the pond are designed to be mown, acute angles should be avoided in turf areas; wide angles, gentle, sweeping curves, and straight lines are easier to mow).

A. Mowing and/or Trimming.

Mowing and/or trimming of vegetation is allowable with certain restrictions.

1. Tall Herbaceous and Medium Herbaceous Plants.

Trimming activities shall not impinge on the growing tips (basal crown) of the bunchgrasses. Cutting these grasses below the basal crown will severely stress and possibly kill them. These plants shall be cut no lower than 18" from the ground. The annual physical removal of all woody weeds from the filtration basin is required.

2. Short Herbaceous Plants.

Sod-forming grasses may be mown or trimmed to an appropriate height. These plants shall not be scalped; cut no lower than 3" from the ground.

B. Integrated Pest Management (IPM).

An integrated pest management (IPM) plan and associated restrictive covenant is required for a bio-filtration pond. IPM is a continuous system of controlling pests (weeds, diseases, insects or others) in which pests are identified, action thresholds are considered, all possible control options are evaluated and selected control(s) are implemented. Control options--which include biological, cultural, manual, mechanical and chemical methods--are used to prevent or remedy unacceptable pest activity or damage. Choice of control option(s) is based on effectiveness, environmental impact, site characteristics, worker/public health and safety, and economics. The goal of an IPM system is to manage pests and the environment to balance benefits of control, costs, public health and environmental quality. IPM takes advantage of all appropriate pest management options.

1. Weed Management.

Preventing the introduction of weeds is the most practical and cost-effective method for their management. Do not allow bare soil to be present, design it out of the system. Prevention programs include such techniques as limiting weed seed dispersal, minimizing soil disturbance, and properly managing desirable vegetation. Remove weeds early in their growth stage, before they set seed. (One year of seeds is equal to seven years of weeds) Allow the desired vegetation to out-compete the weeds.

a. Mulch: Control weeds by blocking light and air space.

i. Bark mulch, the traditional material for minimizing weeds in ornamental landscapes, is not recommended because it will tend to float or otherwise be washed out of the system. The innovative use of non-traditional mulches will be required when ornamental beds are used in bio-filtration facilities. Gravel is permitted as mulch both in the sediment basin and the filter basin.

ii. Gravel or crushed recycled glass equivalent in size to gravel may be used as mulch in bio-filtration.

iii. Weed fabric is not permitted in bio-filtration due to the potential for clogging of the pores.

b. Cultivation: Cultivating cuts the weed roots below the soil to reduce root carbohydrates. May be done by hand tools only; using cultivating machines is not acceptable. Repeat cultivation at 2-3 week intervals during the growing season. Keep hoes sharp and in good condition to reduce the effort needed. Any bare areas shall be re-seeded.

c. Organic herbicides: Be aware that organic herbicides shall be used with caution and can be dangerous in concentrated form. Personal protective equipment shall be used: rubber gloves, long pants, eye protection. The use of organic herbicides is restricted to the following products:

i. Acetic acid (20% vinegar) is effective on small annuals.

ii. Essential oils: Includes cinnamon, clove, summer savory and thyme shall be used at the appropriate concentration. Effective on a limited number of species.

2. Mosquito Management.

Bio-filtration ponds shall not become breeding places for mosquitoes. Meet the drainage requirements established per 1.6.7 (C). Once the pond has drained, remaining incidental standing water shall not be present for longer than three days (72 hours) thereafter.

3. Wildlife and Pet Management.

In addition to water quality treatment, bio-filtration ponds offer additional benefits such as providing food and habitat for wildlife. Pets may also be attracted to them. However, activities by animals within a pond shall not interfere with pond functions and design objectives. Digging or burrowing by animals in the filtration basin is particularly troublesome. There is the potential for certain animals to become a pest of bio-filtration ponds in the Austin area. Evaluate the potential for problems due to animal activity in the proposed pond site. Where the potential exists for problematic activity, fencing or similar exclusionary method shall be provided.

C. Irrigation. Irrigation will be necessary to establish the vegetative community during the first 3-6 months after planting. Thereafter irrigation needs should be minimal and a permanent irrigation system may not be necessary. If a permanent irrigation system is proposed, the design shall address both storm water management and plant health needs. In particular, overwatering is unacceptable as it will negatively impact the hydraulic performance and pollutant removal capabilities of the bio-filtration system. The following minimum criteria will apply for permanent irrigation systems:

- Soil water moisture sensors shall be installed at appropriate depths and locations in the bio-filtration basin.
- No irrigation during periods when rainfall is occurring.
- No irrigation is to commence until the soil moisture content of the filtration media is 25% of the Available Water Capacity (AWC). For plants native or adapted to arid and semi-arid conditions, no irrigation should commence until the soil moisture content is at Wilting Point (WP), or 0% AWC.
- Irrigation will cease once the soil moisture content is 75% AWC; 50% for plants native or adapted to arid and semi-arid conditions.
- It is required that the designer conduct a water balance to aid in the design, using a time step of one day or less.

D. Maintenance. Once vegetation is established, bio-filtration systems should require less maintenance than sand filtration systems because the vegetation protects the filtration media from surface crusting and sediment clogging. Plant roots also provide a pathway for water to permeate down into the media, thus further enhancing the hydraulic performance of the system. Unless damaged by unusual sediment loads, high flows, or vandalism, the bio-filtration media should be left undisturbed and allowed to age naturally.

Water Plants as necessary during the first growing season and during dry periods. Irrigation will be necessary to establish the vegetative community during the first 3-6 months after planting has been completed and by hand immediately after completion of the project.

Biweekly inspection of vegetation during first growing season until 95% vegetative cover is established.

Monthly Check for accumulated sediments, remove as needed.

Quarterly removal of debris, sediment accumulation, and soil media should be replaced in void areas caused by settlement, and repair eroded areas. Remulch any void areas by hand whenever needed.

Six months remove and replace dead and diseased vegetation. Removal and replacement of all dead and diseased vegetation considered beyond treatment (See planting specifications).

Treat all diseased trees and shrubs mechanically or by hand depends on insect or disease infestation.

Late Winter harvesting involving trimming of bunchgrasses (trim to minimum 18" or higher), and mowing of turf grasses (minimum 3" high). For other types vegetation see recommendations in the planting specifications.

Spring remove previous mulch layer before applying new layer (optional) by hand once every two to three years in the Spring.

Any time 48 hour drawdown time is exceeded or significant decrease in drawdown time is observed evaluate bed soil, under drain system and appropriate measures should be taken. Bio-filtration pond vegetation shall be managed so that a dense, healthy vegetative cover is preserved. Once established, native grasses shall be maintained without fertilizers and limited use of organic herbicides. A recorded restrictive covenant and cover sheet notes will establish the requirements for the implementation and on-going maintenance of an approved Integrated Pest Management Plan (IPM).

E. Signage.

Delineate the boundaries of the bio-filtration area as minimal mow maintenance, no fertilizers, and limited use of organic herbicides application is allowed.

F. Sequence of Construction.

The following sequence of construction shall be used for all development using the bio-filtration design criteria. The applicant is encouraged to provide any Additional details appropriate for the particular development.

1. Erosion controls and tree protection are to be installed as indicated on the approved site plan.
2. Contact the Watershed Protection and Development Review Department to schedule a preconstruction coordination meeting to be held on site. During the pre-construction meeting the bio-filtration certification requirements will be reviewed.
3. Erosion controls will be revised, if needed, to comply with Inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.
4. Rough-cut all required or necessary ponds. Either the permanent outlet structure or a temporary outlet shall be constructed prior to development of any embankment or excavation that leads to pending conditions. The outlet system shall consist of a low-level outlet and an emergency overflow meeting the requirements of the Drainage Criteria Manual (Section 8.3) and/or the Environmental Criteria Manual as required. The outlet system shall be protected from erosion and shall be maintained throughout the course of construction until final restoration is achieved.
5. Temporary controls to be inspected and maintained weekly and prior to anticipated rainfall events, and after rainfall events, as needed.
6. Schedule a mid-construction conference with the City Inspector to coordinate changes in the construction schedule and evaluate effectiveness of the erosion control plan after possible construction alterations to the site. The bio-filtration media shall be delivered to, or mixed at, the site prior to the mid- construction conference. The media shall be certified as meeting the required specifications by the project Engineer, or his/her designee, and approved by the City Inspector. The media shall be stored on-site separate from other materials, and covered to prevent erosion of the mixture by rainfall and runoff. The media shall have a prominent tag affixed that reads "BIOFILTRATION MEDIA FOR WATER QUALITY POND."
7. Complete construction and stabilize all areas draining to the bio-filtration basin. Permanent controls will be cleaned out and filter media will be installed after stabilization of the site. Pre-soak the in-place bio-filtration media and add additional media as needed until the 18" design depth is achieved. Provide plant material tags for the vegetation to the City Inspector prior to planting. The project Engineer shall be present during installation of the bio-filtration media and plantings, and approve the installation.
8. Complete permanent erosion control and site restoration. Remove temporary erosion/sedimentation controls and tree protection. Restore any areas disturbed during removal of erosion/sedimentation controls.
9. Provide Engineer's concurrence letter. Other items:
 - a. All requirements in 1.6.3.C.1. apply except as noted above.
 - b. Vegetative cover shall be at least 95%, with no un-vegetated area exceeding ten (10) square feet, and no evidence of erosion.

c. The minimum vegetation height shall be three (3) inches for turf grasses and eighteen (18) inches for bunchgrasses. Vegetation that is mowed or cut shall be removed.

d. An approved Integrated Pest Management (IPM) Plan is required.

10. Rainwater Harvesting Maintenance.

Proper monitoring and maintenance is important for any system to work appropriately and efficiently. Each configuration will perform differently. After the system has stabilized, inspection and maintenance might be needed several times a year and/or after heavy rainfall events. A pretreatment filter system (i.e., leaf guards, strainers, roof washers, etc.) will be required prior to the cistern. An approved Integrated Pest Management Plan (IPM) with a recorded restrictive covenant will be required for all drainage areas to the control and irrigation areas.

a. Post Construction:

The control and repair of erosion rills, from the irrigation system, should take place after each rainfall event until the vegetation is well established.

Adjustments to the irrigation area should be considered as the vegetation matures and/or to minimize erosion problem areas.

Quarterly or after each rain event:

Inspect water tanks periodically to insure proper functioning. Screen inlet and outlet pipes to keep the system closed to mosquitoes. Cap and lock tanks for safety.

Caps should have access ports for interior inspection and maintenance.

Clean pretreatment filter system, gutters, inflow, and outflow pipes as needed; sediment, trash, leaves, or other debris should not be allowed to accumulate to a point where it impedes the proper function of the rainwater harvesting system.

Irrigation systems should be cleaned and damage sprinkler heads replaced.

b. Other items:

The requirements for retention/irrigation systems apply when rainwater harvesting is designed to irrigate a vegetated area.

The requirements for vegetative filter strips apply when a rainwater harvesting is designed to discharge to a vegetated area to be infiltrated.

11. Porous Pavement for Pedestrian Use

a. Verify that the porous pavement receives no off-site runoff.

b. Verify that the porous pavement is protected from vehicular traffic.

c. Prior to final acceptance it shall be demonstrated that the hydraulic conductivity of any portion of the porous pavement is at least 20 inches/hour or, if the system is saturated, the entire water quality volume infiltrates into the subgrade within 24 hours.

12. Construction.

Subgrade Preparation. Since porous pavement is an infiltration practice it is imperative that the permeability of the underlying native soils be preserved. It is important to protect the subgrade from over compaction, accumulation of fines, excessive construction equipment traffic, and surface ponding. No grading should take place during wet soil conditions to minimize sealing of the soil surface. In situations where the subgrade has been over compacted or the permeability has been diminished scarification should take place to a depth sufficient to match the naturally occurring in-situ state, typically scarification should be a minimum of three (3) to twelve (12) inches in depth. Any accumulation of debris, fines, or sediment that has occurred during subgrade preparation should be removed prior to starting the gravel bed installation.

Gravel Bed Preparation. Immediately upon completion of the subgrade preparation and after acceptance of the subgrade work by the Watershed Protection and Development Review inspector the placement of the one-half (0.5) to one and one-half (1.5) inch diameter washed, rounded, river gravel, can begin. Any accumulation of debris, fines, or sediment that has occurred during the placement of the gravel bed installation should be removed.

Observation Ports. Observation ports are required in order to determine if the system is infiltrating properly. Each observation port should be a perforated PVC pipe, 4-6" diameter, with threaded end cap, flush with top of gravel layer, and protected from vandalism (e.g., cover end cap with porous pavement cutout). Observation ports are to be placed in representative locations at a minimum spacing of one port per 5,000 square feet of porous pavement area, with a least one port per contiguous pavement section.

Porous Pavement Installation. Contractor installation qualifications require that the contractor provide to the Watershed Protection and Development Review Department inspector at the preliminary construction meeting a statement attesting to qualifications and demonstrating experience with the following porous pavement procedures and tests:

- a. A minimum of two (2) completed projects with addresses
- b. Measuring unit weight acceptance data
- c. Conducting in-situ pavement tests including void content and unit weight
- d. Preparing product samples

If the installing contractor and pavement producer do not have sufficient experience with porous pavement systems, the installing contractor shall retain an experienced consultant to monitor production, handling, and placement operations at the contractor's expense.

13. Construction and Post construction:

Do not seal or repave with non-porous materials.

No piling of dirt, sand, gravel, or landscape material without covering the pavement first with a durable cover to protect the integrity of the pervious surface.

All landscape cover shall be graded to prevent washing and or floating of such materials onto or through the pervious surface. No off-site flows allowed onto the porous pavement area.

All chemical spills inclusive but not limited to petrochemicals, hydrocarbons, pesticides, and herbicides should be reported to the owner so they can prevent uncontrolled migration. Chemical migration control may require flushing, and/or the introduction of microbiological organisms to neutralize any impacts to the soil or water.

a. Monthly:

Ensure that paving area is clean of debris, ensure that paving dewater between storms, and ensure that the area is clean of sediments.

b. Semi-annually:

The porous pavement should be protected from landscape clogging due to runoff from landscape areas, rooftops, and other areas that may significantly reduce the long-term permeability by diverting flows away. It is recommended that the pervious surface be power washed and surface vacuumed semi-annually in order to flush out silt or other contaminants that may reduce the long-term permeability. It is recommended that this frequency be increased for areas where overhanging vegetation, excessive dirt and pollutants are frequent.

c. Annually:

Inspect the surface for deterioration and repair and/or replace porous pavement as necessary.

d. Signage.

Signs should be posted in landscape areas and/or at entrances to the property as reminders of an ecologically sensitive pavement structure and that certain guidelines shall be adhered to.

14. Sequence of Construction.

The following sequence of construction shall be used for all development using the porous pavement design criteria. The applicant is encouraged to provide any Additional details appropriate for the particular development.

- a. Erosion controls and tree protection are to be installed as indicated on the approved site plan.
- b. Contact the Watershed Protection and Development Review Department to schedule a preconstruction coordination meeting to be held on site.
- c. Contractor installation letter attesting to qualifications and demonstrating experience with porous pavement systems shall be provided to the inspector at the preliminary construction meeting.
- d. Erosion controls will be revised, if needed, to comply with Inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.
- e. Rough-cut all required or necessary ponds. Either the permanent outlet structure or a temporary outlet shall be constructed prior to development of any embankment or excavation that leads to ponding conditions. The outlet system shall consist of a low-level outlet and an emergency overflow meeting the requirements of the Drainage Criteria Manual and/or the Environmental Criteria Manual as required. The outlet system shall be protected from erosion and shall be maintained throughout the course of construction until final restoration is achieved.
- f. Temporary controls to be inspected and maintained weekly and prior to anticipated rainfall events, and after rainfall events, as needed.
- g. Schedule a mid-construction conference with the City Inspector to coordinate changes in the construction schedule and evaluate effectiveness of the erosion control plan after possible construction alterations to the site.

- h. Contact Watershed Protection and Development Review Department 48 hours prior to schedule inspection of sub-grade prior to placement of the gravel bed and porous pavement installation. The removal of fines, scarification of over compacted subgrade bed, and restoration of the naturally occurring in-situ state should occur prior to placement of the gravel bed and installation of the porous pavement. Conduct permeability test to verify that the system functions as designed, i.e., apply ³ 12.5 gallons/sq.ft. of water within 5 minutes to at least three representative areas; if any runoff occurs the system is not acceptable.
 - i. Complete permanent erosion control and site restoration. Remove temporary erosion/sedimentation controls and tree protection. Restore any areas disturbed during removal of erosion/sedimentation controls.
 - j. Upon completion of the proposed site improvements the engineer shall provide an Engineer's concurrence letter certifying in writing that the proposed facilities were constructed in conformance with the approved plans.
15. Non-Required Vegetation (Section 1.6.7.G).
- a. An approved Integrated Pest Management Plan with a recorded Restrictive covenant is required. It is extremely important that fertilizer and chemical use be minimized; otherwise the Non- required vegetation may become a source of pollution instead of a treatment best management practice. Tree Pruning and vegetation management should be modified (i.e., less frequent and less intensive) to maximize the leaf surface area, or Leaf Area Index (LAI), the 25-year growth root system, and the rainfall interception rate to increase future benefits.
 - b. As non-required vegetation is to have no off-site runoff and is also required to have porous pavement (or undisturbed natural ground) extended to at least the 25-year growth root system, the porous pavement requirements apply (see 1.6.3.C.8).
 - c. Damage to vegetation shall be corrected immediately, with replanting done if necessary.

EXHIBIT E
City of Austin, Texas
EQUAL EMPLOYMENT/FAIR HOUSING OFFICE
NON-DISCRIMINATION CERTIFICATION

City of Austin, Texas
Human Rights Commission

To: City of Austin, Texas, ("OWNER")

I hereby certify that our firm conforms to the Code of the City of Austin, Section 5-4-2 as reiterated below:

Chapter 5-4. Discrimination in Employment by City Contractors.

Sec. 4-2 Discriminatory Employment Practices Prohibited. As an Equal Employment Opportunity (EEO) employer, the Contractor will conduct its personnel activities in accordance with established federal, state and local EEO laws and regulations and agrees:

- (B) (1) Not to engage in any discriminatory employment practice defined in this chapter.
- (2) To take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without discrimination being practiced against them as defined in this chapter. Such affirmative action shall include, but not be limited to: all aspects of employment, including hiring, placement, upgrading, transfer, demotion, recruitment, recruitment advertising; selection for training and apprenticeship, rates of pay or other form of compensation, and layoff or termination.
- (3) To post in conspicuous places, available to employees and applicants for employment, notices to be provided by OWNER setting forth the provisions of this chapter.
- (4) To state in all solicitations or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will receive consideration for employment without regard to race, creed, color, religion, national origin, sexual orientation, gender identity, disability, veteran status, sex or age.
- (5) To obtain a written statement from any labor union or labor organization furnishing labor or service to Contractors in which said union or organization has agreed not to engage in any discriminatory employment practices as defined in this chapter and to take affirmative action to implement policies and provisions of this chapter.
- (6) To cooperate fully with OWNER's Human Rights Commission in connection with any investigation or conciliation effort of said Human Rights Commission to ensure that the purpose of the provisions against discriminatory employment practices are being carried out.
- (7) To require compliance with provisions of this chapter by all subcontractors having fifteen or more employees who hold any subcontract providing for the expenditure of \$2,000 or more in connection with any contract with OWNER subject to the terms of this chapter.

For the purposes of this Offer and any resulting Contract, Contractor adopts the provisions of the City's Minimum Standard Nondiscrimination Policy set forth below.

City of Austin
Minimum Standard Non-Discrimination in Employment Policy:

As an Equal Employment Opportunity (EEO) employer, the Contractor will conduct its personnel activities in accordance with established federal, state and local EEO laws and regulations.

The Contractor will not discriminate against any applicant or employee based on race, creed, color, national origin, sex, age, religion, veteran status, gender identity, disability, or sexual orientation. This policy covers all aspects of employment, including hiring, placement, upgrading, transfer, demotion, recruitment, recruitment advertising, selection for training and apprenticeship, rates of pay or other forms of compensation, and layoff or termination.

Further, employees who experience discrimination, sexual harassment, or another form of harassment should immediately report it to their supervisor. If this is not a suitable avenue for addressing their complaint, employees are advised to contact another member of management or their human resources representative. No employee shall be discriminated against, harassed, intimidated, nor suffer any reprisal as a result of reporting a violation of this policy. Furthermore, any employee, supervisor, or manager who becomes aware of any such discrimination or harassment should immediately report it to executive management or the human resources office to ensure that such conduct does not continue.

Contractor agrees that to the extent of any inconsistency, omission, or conflict with its current non-discrimination employment policy, the Contractor has expressly adopted the provisions of the City's Minimum Non-Discrimination Policy contained in Section 5-4-2 of the City Code and set forth above, as the Contractor's Non-Discrimination Policy or as an amendment to such Policy and such provisions are intended to not only supplement the Contractor's policy, but will also supersede the Contractor's policy to the extent of any conflict.

UPON CONTRACT AWARD, THE CONTRACTOR SHALL PROVIDE A COPY TO THE CITY OF THE CONTRACTOR'S NON-DISCRIMINATION POLICY ON COMPANY LETTERHEAD, WHICH CONFORMS IN FORM, SCOPE, AND CONTENT TO THE CITY'S MINIMUM NON-DISCRIMINATION POLICY, AS SET FORTH HEREIN, OR THIS NON-DISCRIMINATION POLICY, WHICH HAS BEEN ADOPTED BY THE CONTRACTOR FOR ALL PURPOSES (THE FORM OF WHICH HAS BEEN APPROVED BY THE CITY'S EQUAL EMPLOYMENT/FAIR HOUSING OFFICE), WILL BE CONSIDERED THE CONTRACTOR'S NON-DISCRIMINATION POLICY WITHOUT THE REQUIREMENT OF A SEPARATE SUBMITTAL.

Sanctions:

Our firm understands that non-compliance with Chapter 5-4 may result in sanctions, including termination of the contract and suspension or debarment from participation in future City contracts until deemed compliant with the requirements of Chapter 5-4.

Term:

The Contractor agrees that this Section 0800 Non-Discrimination Certificate or the Contractor's separate conforming policy, which the Contractor has executed and filed with the Owner, will remain in force and effect for one year from the date of filing. The Contractor further agrees that, in consideration of the receipt of continued Contract payments, the Contractor's Non-Discrimination Policy will automatically renew from year-to-year for the term of the underlying Contract.

Dated this 24th day of September, 2014

CONTRACTOR

Authorized
Signature

Title

EEBH Industries, Inc.

Abbas Mone

Regional Marketing Manager

EXHIBIT E
City of Austin, Texas
EQUAL EMPLOYMENT/FAIR HOUSING OFFICE
NON-DISCRIMINATION CERTIFICATION

City of Austin, Texas
Human Rights Commission

To: City of Austin, Texas, ("OWNER")

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- (2) To take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without discrimination being practiced against them as defined in this chapter. Such affirmative action shall include, but not be limited to: all aspects of employment, including hiring, placement, upgrading, transfer, demotion, recruitment, recruitment advertising; selection for training and apprenticeship, rates of pay or other form of compensation, and layoff or termination.
- (3) To post in conspicuous places, available to employees and applicants for employment, notices to be provided by OWNER setting forth the provisions of this chapter.
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- (5) To obtain a written statement from any labor union or labor organization furnishing labor or service to Contractors in which said union or organization has agreed not to engage in any discriminatory employment practices as defined in this chapter and to take affirmative action to implement policies and provisions of this chapter.
- (6) To cooperate fully with OWNER's Human Rights Commission in connection with any investigation or conciliation effort of said Human Rights Commission to ensure that the purpose of the provisions against discriminatory employment practices are being carried out.
- (7) To require compliance with provisions of this chapter by all subcontractors having fifteen or more employees who hold any subcontract providing for the expenditure of \$2,000 or more in connection with any contract with OWNER subject to the terms of this chapter.

For the purposes of this Offer and any resulting Contract, Contractor adopts the provisions of the City's Minimum Standard Nondiscrimination Policy set forth below.

City of Austin
Minimum Standard Non-Discrimination in Employment Policy:

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Further, employees who experience discrimination, sexual harassment, or another form of harassment should immediately report it to their supervisor. If this is not a suitable avenue for addressing their complaint, employees are advised to contact another member of management or their human resources representative. No employee shall be discriminated against, harassed, intimidated, nor suffer any reprisal as a result of reporting a violation of this policy. Furthermore, any employee, supervisor, or manager who becomes aware of any such discrimination or harassment should immediately report it to executive management or the human resources office to ensure that such conduct does not continue.

Contractor agrees that to the extent of any inconsistency, omission, or conflict with its current non-discrimination employment policy, the Contractor has expressly adopted the provisions of the City's Minimum Non-Discrimination Policy contained in Section 5-4-2 of the City Code and set forth above, as the Contractor's Non-Discrimination Policy or as an amendment to such Policy and such provisions are intended to not only supplement the Contractor's policy, but will also supersede the Contractor's policy to the extent of any conflict.

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Sanctions:

Our firm understands that non-compliance with Chapter 5-4 may result in sanctions, including termination of the contract and suspension or debarment from participation in future City contracts until deemed compliant with the requirements of Chapter 5-4.

Term:

The Contractor agrees that this Section 0800 Non-Discrimination Certificate or the Contractor's separate conforming policy, which the Contractor has executed and filed with the Owner, will remain in force and effect for one year from the date of filing. The Contractor further agrees that, in consideration of the receipt of continued Contract payments, the Contractor's Non-Discrimination Policy will automatically renew from year-to-year for the term of the underlying Contract.

Dated this 24 day of July 2014

CONTRACTOR
Authorized
Signature

Title

Robert S. [Signature]
James [Signature]
Chief Program Officer

ATTACHMENT "A"

STANDARD, SPECIAL, AND PROVISION
SPECIFICATIONS

187 Pages Including Cover Page

**ITEM NO. 102S
CLEARING AND GRUBBING**

102S.1 Description

This item shall govern the removal and disposal of all trees, stumps, brush, roots, shrubs, vegetation, logs, rubbish and other objectionable material.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text the inch-pound units are given preference followed by SI units shown within parentheses.

102S.2 Submittals

The submittal requirements of this specification item may include:

- A. A permit when utility adjustments are made in the right-of-way, and
- B. A plan for removal and deposition of all clearing and grubbing materials and debris.

102S.3 Construction Methods

Prior to commencement of this work, all required erosion control and tree protection measures indicated on the Drawings shall be in place. The existing utilities shall be located and protected as specified in the Standard Contract Documents, Section 00700, "General Conditions" and/or indicated on the Drawings. A permit shall be required when utility adjustments are to be made in preparation for construction in the right-of-way, as specified in Section 5.2.0 of the City of Austin Utilities Criteria Manual.

Areas within the construction limits indicated on the Drawings shall be cleared of all trees, stumps, brush, etc., as defined in section 102S.1; except trees or shrubs scheduled for preservation which shall be carefully trimmed as directed, in accordance with Item No. 610S, "Preservation of Trees and Other Vegetation" and shall be protected from scarring, barking or other injuries during construction operations. All exposed cuts over 2 inches (50 millimeters) in diameter, exposed ends of pruned limbs or scarred bark shall be treated with an approved asphalt material within 24 hours of the pruning or injury.

Construction equipment shall not be operated nor construction materials stockpiled under the canopies of trees, unless otherwise indicated on the Drawings and/or specified in the Contract Documents. Excavation or embankment materials shall not be placed within the drip line of trees until tree wells are constructed.

Within the construction limits or areas indicated, all obstructions, stumps, roots, vegetation, abandoned structures, rubbish and objectionable material shall be removed to the following depths:

1. In areas to receive 6 inches (150 mm) or more embankment, a minimum of 12 inches

(300 mm) below natural ground.

2. In areas to receive embankment less than 6 inches (150 mm), a minimum of 18 inches (450 mm) below the lower elevation of embankment, structure or excavation.

3. In areas to be excavated a minimum of 18 inches (450 mm) below the lower elevation of the embankment, structure or excavation.

4. In all other areas a minimum of 12 inches (300 mm) below natural ground.

Holes remaining after removal of all obstructions, objectionable material, trees, stumps, etc. shall be backfilled with select embankment material and compacted by approved methods. All cleared and grubbed material shall be disposed of in a manner satisfactory to the Engineer or designated representative. Unless otherwise provided, all materials as described above shall become the property of the Contractor and removed from the site and disposed of at a permitted disposal site.

Burning materials at the site shall conform to Standard Contract Document Section 01550, "Public Safety and Convenience".

102S.4 Measurement

"Clearing and Grubbing", when included in the contract as a pay item, will be measured by the acre (hectare: 1 hectare is equal to 2.471 acres), 100 foot (100 feet is equal to 30.5 meters) stations or lump sum, regardless of the width of the right of way.

102S.5 Payment

The work and materials presented herein will not be paid for directly, but shall be included in the unit price bid for the item of construction in which this item is used, unless specified as a separate pay item in the contract bid form. When included for payment, it shall be paid for at the unit bid price for "Clearing and Grubbing". This price shall include full compensation for all work herein specified, including the furnishing of all materials, equipment, tools, labor and incidentals necessary to complete the Work.

Payment, when included as a contract pay items, will be made under one of the following:

Pay Item No. 102S-A:	Clearing and Grubbing	Per Acre.
Pay Item No. 102S-B:	Clearing and Grubbing	Per 100 foot Station.
Pay Item No. 102S-C:	Clearing and Grubbing	Lump Sum.

End

SPECIFIC CROSS REFERENCE MATERIALS
Specification Item 102S, "CLEARING AND GRUBBING"

City of Austin Standard Contract Documents

Designation	Description
00700	General Conditions
01550	Public Safety and Convenience

City of Austin Utilities Criteria Manual

Designation	Description
Section 5.2.0	Permit for Excavation in the Public Right-of-Way

City of Austin Standard Specifications

Designation	Description
Item No. 110S	Street Excavation
Item No. 111S	Excavation
Item No. 610S	Preservation of Trees and Other Vegetation

RELATED CROSS REFERENCE MATERIALS

Specification 102S, "CLEARING AND GRUBBING"

The Code of the City of Austin, Code of Ordinances, Volume 1

Designation	Description
Article 15-12-166	Permit Required
Article 15-12-173	Conditions for Permit Issuance
Article 15-12-174	Permit Term

City of Austin Standard Contract Documents

<u>Designation</u>	<u>Description</u>
01500	Temporary Facilities

City of Austin Standard Specifications

Designation	Description
Item No. 101S	Preparing Right of Way
Item No. 104S	Removing Portland Cement Concrete
Item No. 120S	Channel Excavation
Item No. 132S	Embankment
Item No. 201S	Subgrade Preparation
Item No. 203	Lime Treatment for Materials In Place
Item No. 204S	Portland Cement Treatment for Materials In Place
Item No. 230S	Rolling (Flat Wheel)
Item No. 232S	Rolling (Pneumatic Tire)
Item No. 234S	Rolling (Tamping)
Item No. 236S	Rolling (Proof)
Item No. 602S	Sodding for Erosion Control
Item No. 604S	Seeding for Erosion Control
Item No. 622S	Diversion Dike
Item No. 628S	Sediment Containment Dikes
Item No. 642S	Silt Fence

City of Austin Standard Details

Designation	Description
610S-1	Tree Protection Fence Locations
610S-2	Tree Protection Fence, Type B Chainlink
610S-3	Tree Protection Fence, Type B Wood

610S-4	Tree Protection Fence, Modified Type A
610S-5	Tree Protection Fence, Modified Type B
621S-1	Diversion
622S-1	Diversion Dike
624S-1	Earth Outlet Sediment Trap
625S-1	Grade Stabilization Structure
627S-1	Grass Lined Swale
627S-2	Grass Lined Swale With Stone Center
628S	Triangular Sediment Filter Dike
628S-1	Hay Bale Dike
629S-1	Brush Berm
630S-1	Interceptor Dike
631S-1	Interceptor Swale
632S-1	Storm Inlet Sediment Trap
633S-1	Landgrading
634S-1	Level Spreader
635S-1	Perimeter Dike
636S-1	Perimeter Swale
637S-1	Pipe Slope Drain (Flexible)
637S-2	Pipe Slope Drain (Flexible)
638S-1	Pipe Outlet Sediment Trap
639S-1	Rock Berm
641S-1	Stabilized Construction Entrance
642S-1	Silt Fence
643S-1	Stone Outlet Structure
644S-1	Stone Outlet Sediment Trap

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

Designation	Description
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 112	Subgrade Widening
Item No. 132	Embankment
Item No. 150	Blading
Item No. 158	Specialized Excavation Work
Item No. 160	Furnishing and Placing Topsoil
Item No. 164	Seeding for Erosion Control
Item No. 204	Sprinkling
Item No. 210	Rolling (Flat Wheel)
Item No. 211	Rolling (Tamping)
Item No. 213	Rolling (Pneumatic Tire)
Item No. 260	Lime Treatment for Materials Used as Subgrade (Road Mixed)
Item No. 265	Lime-Fly Ash (LFA) Treatment for Materials Used as Subgrade

Texas Department of Transportation: Manual of Testing Procedures

Designation	Description
Tex-103-E	Determination of Moisture Content of Soil Materials
Tex-105-E	Determination of Plastic Limit of Soils

Current Version: 08-20-07

Previous Versions: 11/18/04, 04/05/99,
08/17/94 and 08/18/00

Tex-106-E

Tex-114-E

Tex-115-E

Method of Calculating the Plasticity Index of Soils
Laboratory Compaction Characteristics and Moisture
Density Relationship of Subgrade & Embankment Soil
Field Method for Determination of In-Place Density of Soils
and Base Materials

Clearing and Grubbing**SPECIAL PROVISION TO****Standard Specification Item No. 102S, Clearing and Grubbing (Version 08-20-07)**

For this contract, Item No. 102S Clearing and Grubbing of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

For this project, Articles 102S.3 Construction Methods, and 102S.5 Payment shall be amended as follows:

102S.3 Construction Methods

ADD the following to the end of the section:

For the purposes of this contract, "standard" clearing and grubbing shall conform to industry standard practices and conditions. "Premium" clearing and grubbing may involve extraordinary site conditions (e.g., dense thickets of thorny brush) or other unusual conditions as agreed to by the Owner and the Contractor which hinders the use of standard practices, requiring the use of greater than typical amounts of labor or employment of special equipment in this activity. Clearing and grubbing will be assumed to be "standard", unless "premium" clearing and grubbing is agreed to by the Owner before bidding.

102S.5 Payment

ADD the following pay items:

Pay Item SP 102S-D1: Clearing and Grubbing, Standard	Per Square Yard
Pay Item SP 102S-D2: Clearing and Grubbing, Premium	Per Square Yard

**Item No. 111S
Excavation****111S.1 Description**

This item shall govern: (1) the excavation and proper utilization or satisfactory disposal of all excavated materials, of whatever character, within the limits of the Work and (2) construction, compaction, shaping and finishing of all designated earthwork areas in accordance with the specification requirements outlined herein and in conformity with the required lines, grades and typical cross sections indicated on the Drawings or as directed by the Engineer or designated representative. When not otherwise included in the Contract Documents, this item shall include the work described in Specification Item Nos. 101S, "Preparing Right of Way", No. 102S, "Clearing and Grubbing", No. 104S, "Removing Portland Cement Concrete", No. 132S "Embankment" and No. 201S, "Subgrade Preparation".

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text inch-pound units are given preference followed by SI units shown within parentheses.

111S.2 Submittals

The submittal requirements of this specification item may include:

- A. A permit when utility adjustments are made in the right-of-way,
- B. A plan for removal and deposition of all 'Waste' materials, and
- C. A Blasting Permit if blasting is required and allowed on the project.

111S.3 Classification

All excavation shall be unclassified and shall include all materials encountered regardless of their nature or the manner in which they are removed.

111S.4 Construction Methods

Prior to commencement of this work, all required erosion control and tree protection measures shall be in place. The existing utilities shall be located and shall be protected as specified in the Standard Contracts Document Section 00700, "General Conditions" and/or indicated on the Drawings. A permit shall be required when utility adjustments are to be made in preparation for construction in the right-of-way, as specified in Section 5.2.0 of the City of Austin Utilities Criteria Manual.

Construction equipment shall not be operated nor construction materials stockpiled under the canopies of trees, unless otherwise indicated on the Drawings. Excavation or embankment materials shall not be placed within the drip line of trees until tree wells are constructed, that conform to Specification Item No. 610S, "Preservation of Trees and Other Vegetation".

All excavation shall be performed as specified herein and shall conform to the established alignment, grades and cross sections indicated on the Drawings. Suitable excavated

materials shall be utilized, insofar as practical, in constructing required embankments. The construction of all embankments shall conform to Specification Item No. 132S, "Embankment". No material shall be stockpiled within the banks of a waterway.

Unsuitable excavated materials or excavation in excess of that needed for construction shall be known as "Waste" and shall become the property of the Contractor. Unsuitable material encountered below the subgrade elevation in roadway cuts, when declared "Waste" by the Engineer or designated representative, shall be replaced with material from the roadway excavation or with other suitable material as approved by the Engineer. It shall become the Contractor's responsibility to dispose of this material off the limits of the right of way in an environmentally sound manner at a permitted disposal site.

All blasting shall conform to the Provisions of the Standard Contract Document Section 01550, "Public Safety and Convenience". In all cases, a Blasting Permit must be obtained in advance from the City of Austin, Department of Public Works and Transportation.

Adequate dewatering and drainage of excavation shall be maintained throughout the time required to complete the excavation work.

111S.5 Measurement

All accepted excavation will be measured by either Method A or B as follows:

(1) Method A

Measurement of the volume of excavation in cubic yards (cubic meters: 1 square meter is equal to 1.306 square yards) by the average end area methods. Cross-sectional areas shall be computed from the existing ground surface to the established line of the subgrade, as shown on typical sections in the Drawings, over the limits of the right of way or other work limits, including parkway slopes and sidewalk areas.

(2) Method B

Measurement of the volume of excavation in cubic yards (cubic meters: 1 square meter is equal to 1.306 square yards), based upon the average end area method taken from pre-construction cross sections and planned grades. The planned quantities for excavation will be used as the measurement for payment for this item.

111S.6 Payment

This item will be paid for at the contract unit bid price for "Excavation", as provided under measurement Method A or B as included in the bid. The bid price shall include full compensation for all work herein specified including dewatering, drainage, subgrade preparation, unless otherwise indicated, and the furnishing of all materials, equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under one of the following:

Pay Item No. 111S-A: Excavation	Per Cubic Yard.
Pay Item No. 111S-B: Excavation, Plan Quantity	Per Cubic Yard.

End

SPECIFIC CROSS REFERENCE MATERIALS**Specification Item 111S, "EXCAVATION"****City of Austin Standard Contract Documents**

<u>Designation</u>	<u>Description</u>
00700	General Conditions
01550	Public Safety and Convenience

City of Austin Utilities Criteria Manual

<u>Designation</u>	<u>Description</u>
Section 5.2.0	Permit for Excavation in the Public Right-of-Way

City of Austin Technical Specifications

<u>Designation</u>	<u>Description</u>
Item No. 101S	Preparing Right of Way
Item No. 102S	Clearing and Grubbing-
Item No. 104S	Removing Portland Cement Concrete
Item No. 132S	Embankment
Item No. 201S	Subgrade Preparation
Item No. 236S	Proof Rolling
Item No. 610S	Preservation of Trees and Other Vegetation

RELATED CROSS REFERENCE MATERIALS**Specification Item 111S, "EXCAVATION"****City of Austin Standard Contract Documents**

<u>Designation</u>	<u>Description</u>
01500	Temporary Facilities

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 120S	Channel Excavation
Item No. 203	Lime Treatment for Materials In Place
Item No. 204S	Portland Cement Treatment for Materials In Place
Item No. 230S	Rolling (Flat Wheel)
Item No. 232S	Rolling (Pneumatic Tire)
Item No. 234S	Rolling (Tamping)
Item No. 602S	Sodding for Erosion Control
Item No. 604S	Seeding for Erosion Control
Item No. 622S	Diversion Dike
Item No. 628S	Sediment Containment Dikes
Item No. 642S	Silt Fence

City of Austin Standard Details

<u>Designation</u>	<u>Description</u>
No. 610S-1	Tree Protection Fence Locations
No. 610S-2	Tree Protection Fence, Type B Chainlink
No. 610S-3	Tree Protection Fence, Type B Wood
No. 610S-4	Tree Protection Fence, Modified Type A

No. 610S-5	Tree Protection Fence, Modified Type B
No. 621S-1	Diversion
No. 622S-1	Diversion Dike
No. 624S-1	Earth Outlet Sediment Trap
No. 625S-1	Grade Stabilization Structure
No. 627S-1	Grass Lined Swale
No. 627S-2	Grass Lined Swale With Stone Center
No. 628S	Triangular Sediment Filter Dike

City of Austin Standard Details

<u>Designation</u>	<u>Description</u>
No. 628S-1	Hay Bale Dike
No. 629S-1	Brush Berm
No. 630S-1	Interceptor Dike
No. 631S-1	Interceptor Swale
No. 632S-1	Storm Inlet Sediment Trap
No. 633S-1	Landgrading
No. 634S-1	Level Spreader
No. 635S-1	Perimeter Dike
No. 636S-1	Perimeter Swale
No. 637S-1	Pipe Slope Drain (Flexible)
No. 637S-2	Pipe Slope Drain (Flexible)
No. 638S-1	Pipe Outlet Sediment Trap
No. 639S-1	Rock Berm
No. 641S-1	Stabilized Construction Entrance
No. 642S-1	Silt Fence
No. 643S-1	Stone Outlet Structure
No. 644S-1	Stone Outlet Sediment Trap

The Code of the City of Austin, Code of Ordinances, Volume 1

<u>Designation</u>	<u>Description</u>
Article 14-11-181	Permit Required
Article 14-11-189	Conditions for Permit Issuance
Article 14-11-190	Excavation Sequence and Permit Term

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 112	Subgrade Widening
Item No. 132	Embankment
Item No. 150	Blading
Item No. 158	Specialized Excavation Work
Item No. 160	Furnishing and Placing Topsoil
Item No. 164	Seeding for Erosion Control
Item No. 204	Sprinkling
Item No. 210	Rolling (Flat Wheel)
Item No. 211	Rolling (Tamping)
Item No. 213	Rolling (Pneumatic Tire)
Item No. 260	Lime Treatment for Materials Used as Subgrade (Road Mixed)
Item No. 265	Lime-Fly Ash (LFA) Treatment for Materials Used as Subgrade

Texas Department of Transportation: Manual of Testing Procedures

<u>Designation</u>	<u>Description</u>
Tex-103-E	Determination of Moisture Content of Soil Materials
Tex-104-E	Determination of Liquid Limit of Soils
Tex-105-E	Determination of Plastic Limit of Soils
Tex-106-E	Method of Calculating the Plasticity Index of Soils
Tex-114-E	Laboratory Compaction Characteristics and Moisture-Density Relationship of Subgrade & Embankment Soil
Tex-115-E	Field Method for Determination of In-Place Density of Soils and Base Materials

**SPECIAL PROVISION TO
Standard Specification Item No. 111S, Excavation (Version 09-26-12)**

For this contract, Item No. 111S Excavation of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

For this project, Articles 111S.3 Construction Methods and 111S.6 Payment shall be amended as follows:

111S.3 Construction Methods

ADD the following to the end of the section:

For the purposes of this contract, "standard" excavation shall conform to industry standard practices and conditions (e.g., soil with minimal rock). "Premium" excavation may involve extraordinary site conditions (e.g., rocky soil) or other unusual conditions as agreed to by the Owner and the Contractor which hinders the use of standard practices, requiring the use of greater than typical amounts of labor or employment of special equipment in this activity. Clearing and grubbing will be assumed to be "standard", unless "premium" clearing and grubbing is agreed to by the Owner before bidding.

111S.6 Payment

ADD the following pay items:

Pay Item SP 111S-A1: Excavation, Standard	Per Cubic Yard
Pay Item SP 111S-A2: Excavation, Premium	Per Cubic Yard

**Item No. 591S
Riprap for Slope Protection****591S.1 Description**

This item shall govern the excavation of all materials encountered for placing riprap, disposal of excess material and backfilling around the completed riprap to the grade indicated on the Drawings. The work shall include all pumping and bailing, furnishing and placing riprap of rock or concrete in accordance with the details and to the dimensions indicated on the Drawings.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses. The work conducted under this item pertains to riprap for features susceptible to erosion.

591S.2 Submittals

The submittal requirements for this specification item shall include:

- The type, size, gradation and source of riprap material (rock or broken concrete),
- B. Aggregate types, gradations and physical characteristics for the Portland cement concrete mix,
- C. Proposed proportioning of materials for the mortar mix,
- D. Type, details and installation requirements for reinforcement, joint material, tie backs and anchors,
- E. Geotextile fabric including characteristics, test data and manufacturer's recommendations for installation.
- F. The type, size, gradation and source of granular filter material.

591S.3 Materials**A. Rock**

Rock used for riprap shall be hard, durable, and angular in shape and consist of clean field rock or rough unhewn quarry rock as nearly uniform in section as practicable. The rocks shall be dense, resistant to weathering and water action, free of overburden, spoils, shale and organic material; and shall meet the gradation requirements for the rock size specified. Neither the width nor the thickness of a single stone should be less than one third of its length. Shale, chalk and limestone with shale or chalk seams are not acceptable. Rounded rock (river rock) shall not be acceptable. Minimum density for acceptable dry rock riprap shall be 150 pounds per cubic foot or a specific gravity of 2.4.

The rock shall be suitable in all respects for the purpose intended. The sources from which the stone will be obtained shall be selected well in advance of the time

when the stone will be required and pre-approved by the Engineer. Control of gradation and material adequacy will be accomplished by visual inspection and field measurement as needed for rock sizes that cannot be analyzed via sieve or mechanical sorting machines. The contractor shall provide two samples of rock meeting the gradation for the size class specified. The samples shall be used as frequent reference for judging the gradation of the riprap supplied. Any difference of opinion between the engineer and the contractor shall be resolved by dumping two random truckloads of stone and performing manual field measurements of individual stones to compute a gradation. Any measured rock size dimension shall be based on the length of the intermediate axis of each stone. Labor, equipment and site location needed to assist in checking gradation shall be provided by the contractor at no additional cost to the owner.

B. Broken Concrete

The rock used for mortar riprap may consist of broken concrete removed under the contract or obtained from other approved sources. Broken concrete shall be as nearly uniform in section as practicable and of the sizes indicated in Section 591S.5, "Dry Riprap".

C. Concrete

Cast in place concrete shall be Class A Concrete and shall conform to Standard Specification Item No. 403S, "Concrete for Structures".

D.

Grout and mortar shall consist of 1 part Portland Cement and 3 parts sand, thoroughly mixed with water. Mortar shall have a consistency such that it can be easily handled and spread by trowel. Grout shall have a consistency such that it will flow into and completely fill all joints.

E. Reinforcement

Reinforcement shall conform to Standard Specification Item No. 406S, "Reinforcing Steel".

F. Joints

Premolded expansion joint material shall conform to Standard Specification Item No. 408, "Concrete Joint Material".

G. Tie Backs and Anchors

Galvanized tie backs and anchors shall be as indicated on the Drawings.

H. Filter Fabric

Filter Fabric shall conform to Standard Specification Item No. 620S, "Filter Fabric".

I. Granular Filter

Aggregate used for granular filters shall conform to Standard Specification Item No. 403S "Concrete for Structures".

591S.4 Construction Methods

Prior to commencement of this work, all required erosion control and tree protection Item 610S, "Preservation of Trees and Other Located and protected as set forth in the "General Conditions". Construction equipment shall not be operated within the drip line of trees unless indicated on the Drawings. Construction materials shall not be placed under the canopies of trees. No excavation or embankment shall be placed within the drip line of trees until tree wells (Standard Detail Number 610S-6, "Tree Protection, Tree Wells") are constructed. Spalls and small stones used to fill open joints and voids in rock riprap shall be rocked and wedged to provide a tight fit.

Unsuitable excavated materials or excavation in excess of that needed for construction shall be known as "Waste" and shall become the Contractor' property and sole responsibility to dispose of this material in an environmentally sound manner off the limits of the right of way at a permitted disposal site.

All blasting shall conform to 01550, "Public Safety and Convenience." The Contractor shall comply with all laws, ordinances, applicable safety code requirements, International Fire Code Chapter 27 "Hazardous Materials General Provisions" and Chapter 33 "Explosives and Fireworks" and any other regulations relative to handling, storage and use of explosives. In all cases, a Blasting Permit must be obtained in advance from the appropriate City agency.

Areas to be protected by rock riprap shall be free of brush, trees, stumps and other objectionable materials and be graded to a smooth compacted surface. All soft or spongy material shall be removed and replaced with appropriate material to the depths shown on the plans or as directed by the engineer. Fill Areas, unless otherwise - Embankment. Unacceptable subgrade conditions shall be reworked according to the Engineer's recommendations. Excavation areas shall be maintained until the riprap is placed.

591S.5 Dry Rock Riprap

The mass of rock riprap shall be placed as to be in conformance with the required gradation mixtures, to the lines, grades and layers thickness that is shown on the drawings. The range of rock sizes for the mixture shall conform to the following recommended gradation requirements relative to the specified median rock size (D50).

Relative Stone Size (inches)	Percent of Gradation Smaller than	Stone Size Designation
---------------------------------	--------------------------------------	---------------------------

1.7 - 2.0 * D50	100	D100
1.3 - 1.7 * D50	85	D85
1.0 - 1.3 * D50	50	D50
0.5 - 1.0 * D50	15	D15

At least 50% of the rocks shall weigh more than the D50 rock size. When the riprap will be placed on an erodible soil, as determined by the Engineer or designated representative, a layer of geotextile filter fabric or a granular filter layer shall be placed, prior to placement of the riprap material. In some cases multiple layers of granular filter material of varying gradations may be required. The median rock riprap size (D50), rock riprap layer thickness, filter type, when applicable the number of granular filter layers, granular filter aggregate gradations (grade/size classification), granular layer thicknesses shall be specified on the plans. The minimum granular filter layer thickness shall be 4 inches (102 mm). Geotextile filter fabric shall conform to Standard Specification No. 620 and be installed with sufficient anchoring and overlap between seams according to the manufacturer's recommendations to ensure full filter barrier protection of the subgrade after riprap installation. When specified on the plans a four (4) inch minimum thickness granular cushion layer of gravel or sand may be placed over the filter fabric to prevent damage the fabric during placement of rock riprap.

Rock riprap shall be machine placed and distributed such that there will be no large accumulations of either larger or smaller sizes. Placing rock riprap by dumping into chutes or similar methods shall not be permitted. The rocks shall be placed in a single layer with close joints. The rock riprap layer thickness shall be no less than the maximum stone size (D100) or 1.5 times the D50, which ever produces the greater thickness. In areas exposed to flowing water the rock riprap layer thickness should be no less than 2.0 times the D50. The upright axis of the rocks shall make an angle of approximately 90 degrees with the embankment slope. The courses shall be placed from the bottom of the embankment upward, with the larger rocks being placed on the lower courses. Open joints shall be filled with spalls. Rocks shall be arranged to present a uniform finished top surface such that the variation between tops of adjacent rocks shall not exceed 3 inches (75 mm). Rocks that project more than the allowable

591S.6 Mortared Rock Riprap

Rock for this purpose, as far as practicable, shall be selected as to size and shape in order to secure fairly large, flat-surfaced rock which may be laid with a true and even surface and a minimum of voids. Fifty percent of the mass rock shall be broad flat rocks, weighing between 100 and 150 pounds (45 and 69 kilograms) each, placed with the flat surface uppermost and parallel to the slope. The largest rock shall be placed near the base of the slope. The spaces between the larger rocks shall be filled with rocks of suitable size, leaving the surface smooth, reasonably tight and conforming to

the contour required on the Drawings. In general, the rocks shall be placed with a degree of care that will insure plane surfaces with variation from the true plane of no more than 3 inches in 4 feet (no more than 60 mm per meter). Warped and curved surfaces shall have the same general degree of accuracy as indicated for plane surfaces.

Before placing mortar, the rocks shall be wetted thoroughly and as each of the larger rocks is placed, it shall be surrounded by fresh mortar and adjacent rocks shall be shoved into contact. After the larger rocks are in place, all of the spaces or opening(s) between them shall be filled with mortar and the smaller rocks then placed by shoving them into position, forcing excess mortar to the surface and insuring that each rock is carefully and firmly embedded laterally. After the work described above has been completed, all excess mortar forced up shall be spread uniformly to completely fill all surface voids. All surface joints then shall be pointed up roughly, either with flush joints or with shallow, smooth raked joints.

591S.7 Concrete Riprap

Concrete for riprap shall be placed as indicated on the Drawings or as directed by the Engineer or designated representative. Unless otherwise indicated on the Drawings, concrete riprap shall be reinforced using wire or bar reinforcement.

Concrete shall be Class A or as indicated otherwise on the Drawings and shall conform

When welded wire reinforcement is indicated, it shall be a minimum of 6 x 6 W1.4 x W1.4 (150 x 150 MW9 x MW9) with a minimum lap of 6 inches (150 mm) at all splices. At the edge of the riprap, the wire fabric shall not be less than 1 inch (25 mm) nor more than 3 inches (75 mm) from the edge of the concrete and shall have no wires projecting beyond the last member parallel to the edge of the concrete.

When bar reinforcement is used, the sectional area of steel in each direction shall not be less than the sectional area of the wire fabric described above. The spacing of bar reinforcement shall not exceed 18 inches (450 mm) in each direction and the distance

Reinforcement shall be supported properly throughout the placement to maintain its position approximately equidistant from the top and bottom surface of the slab.

Unless otherwise noted, expansion joints of the size and type indicated on the Drawings shall be provided at intervals not to exceed 40 feet (12.2 meters) and shall extend the full width and depth of the concrete. Marked joints shall be made 3/8 inch (9.5 mm) deep at 10 foot (3 meter) intervals. All joints shall be perpendicular and at right angles to the forms unless otherwise indicated on the Drawings.

Slopes and bottom of the trench for toe walls shall be compacted and the entire area sprinkled before the concrete is placed.

After the concrete has been placed, consolidated and shaped to conform to the dimensions indicated on the Drawings and has set sufficiently to avoid slumping, the surface shall be finished with a wooden float to secure a reasonably smooth surface.

Immediately following the finishing operation, the riprap shall be cured conforming to Standard Specification Item No. 410S, "Concrete Structures".

591S.8 Pneumatically Placed Concrete Riprap, Type I and Type II

Pneumatically placed concrete for riprap shall be placed as indicated on the Drawings or as established by the Engineer or designated representative. concrete shall conform to Standard Specification Item No. 404S, "Pneumatically Placed Concrete". Reinforcement shall conform to the details indicated on the Drawings and Standard Specification Item No. 406S, "Reinforcing Steel". Reinforcement shall be supported properly throughout placement of concrete. All subgrade surfaces shall be moist when concrete is placed.

The surface shall be given a wood float finish or a gun finish as indicated on the Drawings.

The strength and design of Pneumatically Placed Concrete Riprap shall be either Type I or if indicated, Type II conforming to Standard Specification Item No. 404S,

Immediately following the finishing operation, the riprap shall be cured conforming to Standard Specification Item No. 410S, "Concrete Structures".

591S.9 Measurement

Measurement of acceptable riprap will be made on the basis of the (a) area in square yards (square meters: 1 square meter equals 1.196 square yards) indicated on the Drawings, complete in place or (b) the volume of concrete placed in cubic yards (cubic meters: 1 cubic meters equals 1.308 cubic yards), complete in place as indicated on the Drawings for the thickness specified.

Concrete toe walls will not be measured separately but shall be included in the unit price bid for riprap of the type with which it is placed.

The riprap quantities, measured as provided above, will be paid for at the unit bid prices per square foot or per cubic yard as indicated for riprap of the various classifications. The Unit Bid Price shall include full compensation for furnishing, hauling and placing all materials, including toe walls, geotextile filter fabric, granular filter material, granular cushion, reinforcement and premolded expansion joint material and for all labor, tools, equipment and incidentals necessary to complete the work.

Payment for excavation of toe wall trenches and for all necessary excavation below natural ground or the bottom of excavated drainage channels will be included in the unit bid price for riprap. Excavation, grading and fill materials required to shape drainage channels shall not be included in the unit bid price for riprap.

Payment for excavation required for shaping of slopes for riprap shall be included in the unit bid price for riprap, except for the situation when the header banks upon which the riprap is to be placed are built by prior contract. In this specific case the excavation for shaping of slopes, will be paid for conforming to Standard Specification Item No. 401,

Payment will be made under one of the following:

Pay Item No. 591S-A:		Per Square Yard.
Pay Item No. 591S-B:		Per Cubic Yard.
Pay Item No. 591S-D:	Mortared Rock Riprap	Per Square Yard.
F:	Concrete Riprap, ___ In.	
G:		Per Cubic Yard.
P:	Pneumatically Placed Concrete Riprap, ___ In.	Per Square Yard.

End

SPECIFIC CROSS REFERENCE MATERIALS**Specification 591S, "Riprap for Slope Protection"****International Fire Code****Designation****Chapter 27****Chapter 33****Description****Hazardous Materials****Explosives and Fireworks****City of Austin Standard Contract Documents****Designation****01550****Description****Public Safety and Convenience****City of Austin Standard Specifications****Designation****Item No. 403S****Item No. 404S****Item No. 406****Item No. 408****o. 410****Item No. 610S****Item No. 620S****Description****Concrete for Structures****Pneumatically Placed Concrete****Reinforcing Steel****Concrete Joint Material****Concrete Structures****Preservation of Trees and Other Vegetation****Filter Fabric****RELATED CROSS REFERENCE MATERIALS****Specification 591S, "Riprap for Slope Protection"****City of Austin Standard Specifications****Designation****Item No. 623S****Description****Dry Stack Rock Wall****Engineering Design Manuals**

Federal Highway Administration, 1989, Design of Riprap Revetment, Hydraulic Engineering Circular HEC-11, FHWA-1P- -016.

ap Design Criteria,
Recommended Specifications, and Design Criteria, NCHRP Report 568.

United States Bureau of Reclamation, 1983, Hydraulic Design of Stilling Basins and Energy Dissipators, Engineering Monograph No. 25.

Current Version: September 26, 2012

PREVIOUS VERSIONS: 9/1/2011, 3/26/08, 2/17/00,
8/17/94

U.S Department of Agriculture, 1983, Soil Conservation Service, Riprap for Slope Protection Against Wave Action, Technical Release No. 69, February.

US Army Corps of Engineers, 1994. Hydraulic Design of Flood Control Channels, US Army Corps of Engineers Engineer Manual EM 1110-2-1601.

Federal Highway Administration, 1998. "Geosynthetic Design and Construction Guidelines," FHWA-HI-95-038.

**ITEM NO. 601S
SALVAGING AND PLACING TOPSOIL****601S.1 Description**

This item shall govern the removal, storage and placement of approved topsoil to the depths and area shown on the Drawings or as directed by the Engineer or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text and accompanying tables, the inch-pound units are given preference followed by SI units shown within parentheses.

601S.2 Submittals

The submittal requirements of this specification item shall include the test results and soil classification necessary for approval of material as suitable topsoil.

601S.3 Materials**A. Topsoil**

1. The topsoil shall be composed of 4 parts of soil mixed with 1 part compost, by volume. The compost shall meet TxDOT Specification Item 161. The soil shall be locally available native soil that meets the following specifications:

- Shall be free of trash, weeds, deleterious materials, rocks and debris.
- 100% shall pass through a 1.5-inch (38-mm) screen.
- Soil to be a loamy material that meets the requirements of the table below in accordance with the USDA textural triangle. Soil known locally as "red death" is not an allowable soil. Textural composition shall meet the following criteria:

Textural Class	Minimum	Maximum
Clay	5%	50%
Silt	10%	50%
Sand	15%	67%

- An owner/engineer may propose use of onsite salvaged topsoil which does not meet the soil texture class required above by providing a soil analysis and a written statement from a qualified professional in soils, landscape architecture, or agronomy indicating the onsite topsoil will provide an equivalent growth media and specifying what, if any, soil amendments are required.

- Soil amendments shall be worked into the existing onsite topsoil with a disc or tiller to create a well-blended material.

2. All disturbed areas to be revegetated are required to provide a minimum of six (6) inches of topsoil. The topsoil shall be able to support the growth of planting (Standard Specification Item No. 608S), seeding (Standard Specification Item No. 604S), sodding (Standard Specification Item No. 602S) and native grassland seeding and planting (Standard Specification Item No. 609S).

B. Water

Water shall be furnished by the Contractor and shall be clean and free from industrial wastes and other objectionable matter.

601S.4 Sources

The topsoil may be obtained from the right-of-way at sites of proposed excavation or embankment when shown on the Drawings or identified by the Engineer or designated representative. The approximate quantity of acceptable topsoil to be salvaged from the project will be shown on the Drawings. The topsoil may also be obtained from approved sources, which are located outside the right-of-way and have been secured by the Contractor.

601S.5 Construction Methods

Precautions will be maintained at all times to protect all trees in the area of construction. Where removal of trees is indicated on the Drawings, they shall be marked as directed by the Engineer or designated representative.

Construction equipment shall not be operated nor construction materials stockpiled under the canopies of trees, unless otherwise indicated on the Drawings and/or specified in the Contract Documents. Topsoil materials shall not be placed within the drip line of trees until tree wells are constructed that conform to Item No. 610S, "Preservation of Trees and Other Vegetation " and Standard Details 591S-1 and 610S-6. The source and stockpile areas shall be kept drained, insofar as practicable, during the period of topsoil removal

The existing topsoil shall be removed from the area indicated on the Drawings, stockpiled in a windrow along the right of way or spread over an area that is ready for topsoil application in accordance with the Drawings or as directed by the Engineer or designated representative.

Trash, wood, brush, stumps, rocks over 1 1/2 inches (37.5 mm) in size and other objectionable material encountered shall be removed and disposed of as directed by the Engineer or designated representative prior to beginning of work required by this item. Grass and other herbaceous plant materials may remain. Large clumps shall be broken up.

After the grading has been completed to the required alignment, grades and cross-sections and prior to the spreading of the salvaged topsoil, any clay or tight soil surfaces shall be scarified by plowing furrows approximately 4 inches (100 mm) deep along horizontal slope lines at 2 foot (600 mm) vertical intervals. The spreading of the salvaged topsoil shall be undertaken as soon as the grading has been completed. The topsoil shall be spread so as to form a cover of

uniform thickness indicated. After the topsoil has been placed and shaped, it shall be sprinkled and rolled to provide a suitable seed bed.

601S.6 Measurement and Payment

Salvaging, removal and/or placing topsoil materials will not be measured for payment, but shall be included in the unit price bid for the item of construction in which these activities are used.

End

SPECIFIC CROSS REFERENCE MATERIALS

Specification 601S, "Salvaging and Placing Topsoil"

City of Austin Standard Specification Items

Designation	Description
Item No. 602S	Sodding for Erosion Control
Item No. 604S	Seeding for Erosion Control
Item No. 608S	Planting
Item No. 609S	Native Grassland Seeding and Planting For Erosion Control
Item No. 610S	Preservation of Trees and Other Vegetation

City of Austin Standard Details

Designation	Description
591S-1	Dry Stack Rock Wall
610S-6	Typical Tree Well Applications

RELATED CROSS REFERENCE MATERIALS

Specification 601S, "Salvaging and Placing Topsoil"

City of Austin Standard Specification Items

Designation	Description
Item No. 102S	Clearing and Grubbing
Item No. 104S	Removing Concrete
Item No. 110S	Street Excavation
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 132S	Embankment
Item No. 606S	Fertilizer

City of Austin Standard Details

Designation	Description
610S-1	Tree Protection Fence Locations
610S-2	Tree Protection Fence, Type B Chainlink
610S-3	Tree Protection Fence, Type B Wood
610S-4	Tree Protection Fence, Modified Type A
610S-5	Tree Protection Fence, Modified Type B

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

Designation	Description
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 160	Furnishing and Placing Topsoil
Item No. 164	Seeding for Erosion Control
Item No. 204	Sprinkling

Texas Department of Transportation: Manual of Testing Procedures

Designation

Tex-103-E

Tex-104-E

Tex-105-E

Tex-106-E

Description

Determination of Moisture Content of Soil Materials

Determination of Liquid Limit of Soils

Determination of Plastic Limit of Soils

Method of Calculating the Plasticity Index of Soils

**SPECIAL PROVISION TO
Standard Specification Item 601S (Version 09-01-11)
Salvaging and Placing Topsoil**

These special provisions serve to modify, add to, and/or delete from the City of Austin Standard Technical Specification Item No. 601S: Salvaging and Placing Topsoil, dated 9/1/2011, incorporated into this Project Manual. Any item, paragraph, article, or work contained therein unless specifically modified, added to or deleted herein shall apply where applicable.

Article 601S.1 Description

DELETE the first paragraph in its entirety and replace with the following:

This item shall govern the salvage, removal (only on direction of owner), storage and placement of existing and/or approved topsoil to the depths and areas shown on the plans or as directed by the Owner.

ADD the following after the first paragraph:

To restore ecological structure to a stream restoration project, the goal is to salvage and stockpile existing soil to preserve its original quantity and quality. Salvaged soil may require amendment depending on results of a soil analysis. Amendment will be specified per SP606S.

Soil preparation methods will be subsidiary to the applicable sod, seed, or planting specifications.

Article 601S.2 Submittals

DELETE the paragraph in its entirety and replace with the following:

The submittal requirements of this specification item shall include the test results and soil classification necessary for approval of material as suitable topsoil, including the following:

A. Activities Before Construction

1. Preconstruction meeting to discuss the soil stripping and stockpiling, and reinstallation of soils.
2. Soil Test to assess nature of the soil and requirement for amendment.
3. Cut sheets for erosion control matting used to keep soil stockpiles in place.
4. Seed tickets for "living" stabilization of stockpiled soil, if required.

B. Submittals Required During Construction

1. Delivery tickets to indicate quantities of all soil amendments recommended by the soil analysis, including compost delivered to the site (reference SP606S). Delivery ticket shall indicate source of materials and brand names.

2. Topsoil stockpiles should be monitored weekly for excessive temperature (above 80°) using a soil thermometer. If high soil temperature is observed, the pile turned. Contractor shall provide a weekly report of recorded temperature of salvaged topsoil pile(s) to the Owner (e-mail is sufficient).
 3. Soil test shall be done after stockpiled soil is in place and has been amended to ensure sufficient amendment per recommendations of the original soil test.
- C. Activities During Construction
1. Owner to verify proper excavation and stockpiling of topsoil and other materials.
 2. After rough grading Owner to inspect subsoil and subgrade areas to ensure:
 - (a) they are free of debris;
 - (b) Proper compaction rates are met;
 - (c) Subgrade is excavated to proper depth and to proper slopes per grading plans;
 - (d) Scalped per Figure 1.
 3. During topsoil placement Owner to inspect for:
 - (a) Soil placement procedures: proper depths, layering, and transitioning;
 - (b) Proper compaction;
 - (c) Proper amendment type and procedures.
- For Items 1 – 3, Owner to be notified at least 48 hours in advance to schedule an inspection or on-site meeting.

Article 601S.3 Materials

(Changes to the paragraph are underlined or stricken)

Delete the following from Item A. Topsoil, 1:

A. Topsoil, #1.

DELETE the first paragraph in its entirety and replace with the following:

All imported topsoil mixes shall be locally available native soil that meets the specifications in SS612.

DELETE the first three bullet points in their entirety.

Article 601S.5 Construction Methods

ADD the following:

Topsoil Salvage and Stockpiling:

1. Pre-salvage vegetation removal
 - a. Existing vegetation should be mowed short and scalped to remove as much vegetation as possible while leaving as much salvageable soil as possible.
2. Timing

- a. It is best not to undertake topsoil salvage when the soil contains excessive moisture; optimal moisture content is 10% to 15%.
3. Handling
 - a. To preserve overall quality of the soil and preclude compaction, minimize vehicular traffic on soils to be stripped. Keep vehicular and pedestrian traffic off soil stockpiles. Loaders shall load and unload from the bottom of the pile.
 - b. Topsoil Stockpiles shall be clearly labeled with signs on site.
 - c. Topsoil stockpiles shall be monitored for excessive temperature above 80 degrees.
 - d. Stockpiled Topsoil should be covered several days before reuse to limit additional soil moisture from precipitation.
4. Duration
 - a. Stockpiles up to approximately five (5) feet high (1.5 m) maximum will stay healthy for up to a year, after which the structure and chemical composition markedly decreases, as will the viability of seeds and soil flora and fauna. Wide, shallow stockpiles are optimal for retention of microbes, viable seeds, etc.
 - b. For soil health, minimize the amount of time that topsoil remains stockpiled.
5. Erosion and Flooding Protection
 - a. Stockpiles should be seeded for stabilization and to maintain soil health. Vegetating the stockpile may help maintain viability of the soil's fungi and microbial communities. If the stockpiles are expected to be kept for longer than 30 days, soil stockpiles may be seeded and done within 10 days of forming the stockpile. Refer to ECM 1.4.7A for *Temporary Vegetative Stabilization of Disturbed Areas*. Consult with City before adding any fertilizer to temporary vegetation on stockpiled soil.
 - b. From September 15 to March 1, seeding shall be a cool season cover crop: Wheat (*Triticum aestivum*), Oats (*Avena sativa*), or Cereal Rye Grain (*Secale cereal*). From March 2 to September 14, seeding shall be vegetated with native seed per SP-609S. The cover crop will act as a "green manure" soil amendment once the topsoil is replaced.
 - c. Implement appropriate weed control strategies.
 - d. Erosion control matting or geotextiles can be used to temporarily protect stockpiles, not plastic.
 - e. Use erosion protection measures to prevent stockpiled topsoil from leaving the stockpile area.
 - f. Stockpile area shall be outside the floodplain.
6. Placement
 - a. Install stockpiled topsoil on top of rough subgrade to achieve finished grades, reestablishing a natural, healthy soil profile.
 - b. Transitioning between the subsoil and salvaged topsoil can be accomplished by applying two to three inches of topsoil, tilling it into the underlying soil, and then applying the remaining soil on top.

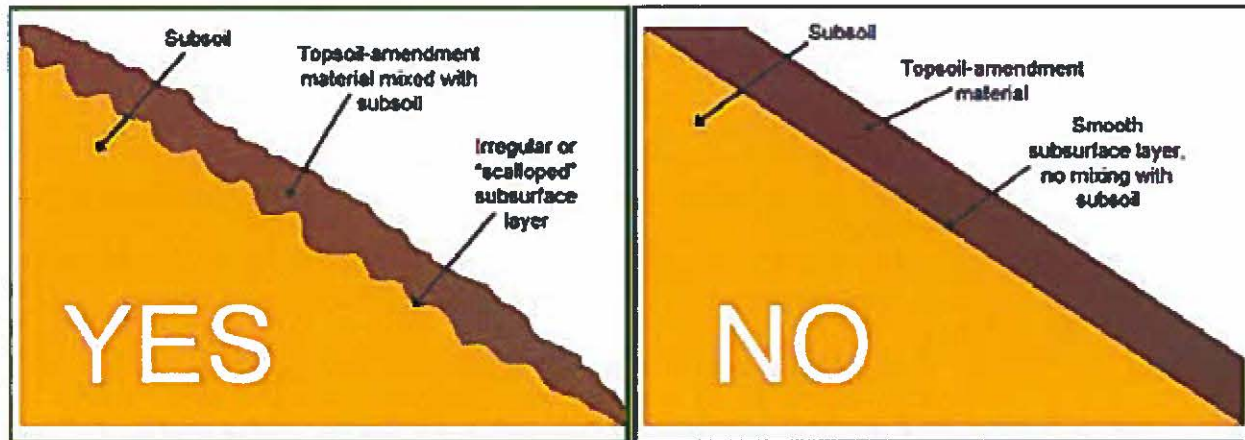


Figure 1 Topsoil amendment applied and mixed with subsoil, creating a scalloped subsurface layer (left). Typical topsoil amendment application without mixing with subsoil (right). Source: Watershed Management Guidebook (Drake & Hogan, 2013).¹

DELETE the third paragraph in its entirety and replace with the following:

The existing topsoil shall be removed from the area indicated on the Drawings, stockpiled in windrows for ease of loading and hauling and to promote seed stock and plant viability. Native soil salvaged from the site shall be stockpiled in locations shown on the drawings or as agreed on between Contractor and City.

ADD the following to the end of the section:

To prevent the compaction of salvaged topsoil, the Contractor shall properly sequence all construction activities, including landscape and irrigation installation, before soil placement. The following activities, among others, shall occur before placing salvaged topsoil:

- Excavation of all tree / large shrub pits;
- Installation of trees and shrubs larger the 5-gallon size;
- Trenching and installation of subsurface irrigation components;
- Avoid travel across areas of placed topsoil or minimize the number of travel routes, to the extent possible. Heavy vehicles shall not be permitted in these areas.

¹ Drake, K., & Hogan, M. (2013). *Watershed Management Guidebook*. An Integrated Environmental Restoration Services, Inc. Publication.

SPECIAL PROVISION

SP601S Salvaging and Placing Topsoil

Article 601S.6 Measurement and Payment

ADD the following:

Topsoil Salvage and Place is paid for at the contract bid price per cubic yard. Payment includes all labor, materials, and equipment necessary to complete this bid item including salvaging, special handling, stockpiling, storage, soil testing, re-handling of material, and placement.

Pay Item SP 601S-A Salvage and Place Topsoil – per Cubic Yard.

End

ITEM NO. 602S
SODDING FOR EROSION CONTROL

602S.1 Description

This item shall govern planting of Bermuda grass; St. Augustine or other acceptable grass sod at locations indicated on the Drawings or as directed by the Engineer or designated representative in accordance with this Standard Specification Item.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text and accompanying tables, the inch-pound units are given preference followed by SI units shown within parentheses.

602S.2 Submittals

The submittal requirements for this specification item shall include the identification of the type and source of sodding, the type of mulch, type of tacking agent and type and rate of application of fertilizer.

602S.3 Materials**A. Block and Mulch Sod**

The sod shall consist of live, growing Bermuda Grass, St. Augustine grass, when shown on the Drawings, or other acceptable grass sod indicated on the Drawings secured from sources that are approved by the Engineer or designated representative. Bermuda Grass sod, St. Augustine sod or other grass sod as shown on the Drawings shall have a healthy, virile root system of dense, thickly matted roots throughout the soil of the sod for a minimum thickness of 1 inch (25 millimeters). The thickness measure does not include grass. The sod shall be cut in rectangular pieces with its shortest side not less than 12 inches (300 mm). The Contractor shall not use sod from areas where the grass is thinned out nor where the grass roots have been dried out by exposure to the air and sun to such an extent as to damage its ability to grow when transplanted.

The sod shall be substantially free from noxious weeds, Johnson grass or other grasses and shall not contain any matter deleterious to its growth or which might affect its subsistence or hardiness when transplanted. Unless the area has been closely pastured, it shall be closely mowed and raked to remove all weeds and long standing stems. Sources from which sod is to be secured shall be approved by the Engineer or designated representative.

Care shall be taken at all times to retain the native soil of the roots of the sod during the process of excavating, hauling and planting. Sod material shall be kept moist from the time it is dug until it is planted. The sod existing at the source shall be watered to the extent required by the Engineer or designated representative prior to excavating.

B. Fertilizer

Fertilizer and the rate of application shall conform to the requirements of Standard Specification Item No. 606S, "Fertilizer".

C. Mulch

Straw mulch shall be oat, wheat or rice straw. Hay mulch may be substituted for straw mulch and shall be Prairie Grass, Bermuda grass or other hay approved by the Engineer or designated representative. The hay or straw mulch shall be free of Johnson grass or other noxious weeds and foreign materials. It shall be kept in a dry condition and shall not be molded or rotted.

D. Water

Water shall be furnished by the Contractor and shall be clean and free of industrial wastes and other substances harmful to the growth of sod or to the area irrigated.

E. Tacking Agents

Tacking agents for straw or hay mulch shall be as shown on the Drawings.

602S.4 Planting Season

All planting shall be done between April and November except as specifically authorized in writing by the Engineer or designated representative.

602S.5 Construction Methods

A. General

After the designated areas have been completed to the lines, grade and cross sections indicated on the Drawings, the surface shall be worked to a depth of not less than 4 inches (100 mm) with a disc, tiller or other equipment approved by the Engineer or designated representative. Fertilizer nutrients shall be applied and tilled. Areas that become crusted shall be reworked to an acceptable condition before sodding. Sodding of the type specified shall conform to the requirements of this Specification Item. The Contractor shall give continuous care to the sodded area until the sod is accepted.

B. Placement

The sod shall be placed on the prepared surface with the edges in close contact and alternate courses staggered. In ditches the sod shall be placed with the longer dimension perpendicular to the flow of water in the ditch. On slopes, starting at the bottom of the slope, the sod shall be placed with the longer dimension parallel to the contours of the ground. The exposed edges of sod shall be buried flush with the adjacent soil. On slopes exceeding 3:1 or where the sod may be displaced, the sod shall be pegged with not less than 4 stakes or ground staples per square yard (square meter) with at least 1 stake or ground staple for each piece of sod.

Pegs shall be of wood lath or similar material, pointed and driven with the flat side against the slope, 6 inches (150 mm) into the ground, leaving approximately 1/2 inch (12.5 mm) of the

top above the ground. Ground staples shall not be less than 13 inches (330 mm) in length and shall be constructed of No. 11 gage (3 mm) wire that is bent to form a "U" approximately 1 inch (25 mm) in width.

C. Watering

Immediately after the area is sodded, it shall be watered with a minimum of 5 gallons of water per square yard (22.5 liters per square meter) and at 10 day intervals as needed and as directed by the Engineer or designated representative. Subsequent to the initial application water shall be applied at a minimum rate of 3 gallons per square yard (13.5 liters per square meter), as required on the Drawings or as directed by the Engineer or designated representative until final acceptance by the City or until the grass uniformly reaches a height of 2 1/2 inches (62.5 mm).

Availability of water from the Austin Water Utility will be limited as stated under the Water Conservation Standard, City of Austin Land Development Code Chapter 6-2, Article II, "Water Use Management Plan Established".

The use of potable water will be restricted as stated in city of Austin Land Development code Sections 6-4-73, 6-4-54, 6-4-63, 6-4-64, 6-4-65, 6-4-81, 6-4-92, 15-9-37(D) and 15-9-101(B).

D. Finishing

Where applicable, the shoulders, slopes and ditches shall be smoothed after planting has been completed and shaped to conform to the desired cross sections shown on the Drawings. Any excess soil from planting operations shall be spread uniformly over adjacent areas or disposed of as directed by the Engineer or designated representative so that the completed surfaces will present a neat appearance. All sodded areas shall be rolled after the initial watering application, when sufficiently dry.

602S.6 Block Sodding

At locations indicated on the Drawings or where directed by the Engineer or designated representative, sod blocks shall be carefully placed on the prepared areas. The fertilizer shall then be applied in accordance with the applicable provisions of Item No. 606S, "Fertilizer" and thoroughly watered. When sufficiently dry, the sodded area shall be rolled or tamped to form a thoroughly compacted, solid mat. Any voids left in the block sodding shall be filled with additional sod and tamped. Surfaces of block sod which, in the opinion of the Engineer or designated representative may slide due to the height and slope of the surface or nature of the soil, shall be pegged with wooden pegs driven through the sod blocks into firm earth sufficiently close to hold the block sod firmly in place. Edges along curbs and drives, walkways, etc., shall be carefully trimmed and maintained until the sodding is accepted.

602S.7 Mulch Sodding

The sod source shall be disked in 2 directions cutting the sod thoroughly to a depth of not less than 4 inches (100 mm). Sod material shall be excavated to a depth of not more than 2 inches (50 mm) below the existing root system, being careful to avoid having soil containing no grass roots. The disked sod may be windrowed or otherwise handled in a manner satisfactory to the

Engineer or designated representative. The material shall be rejected if not kept in a moist condition.

Prior to placement of mulch sod, the cut slopes shall be scarified by plowing furrows 4 inches (100 mm) to 6 inches (150 mm) deep along horizontal slope lines at 2 foot (600 mm) vertical intervals. Excavated material from the furrows shall not protrude more than 3 inches (75 mm) above the original surface of the cut. Fertilizer shall be distributed uniformly over the area in accordance with the applicable provisions of Item No. 606S, "Fertilizer". The sod shall then be deposited upon the prepared area and spread uniformly to the thickness indicated on the Drawings.

Any section that is not true to lines and cross sections shall be remedied by the addition of sod material or by reshaping the material to meet the requirements of "Finishing" [Section 602S.5 (4)]. After the sod material has been spread and shaped, it shall be thoroughly wetted and compacted with a corrugated roller of the "Cultipacker" type. All rolling of slope areas shall be on the contour.

602S.8 Measurement

Work and acceptable material for "Sodding for Erosion Control" will be measured by the square yard (square meter: 1 square meter is equal to 1.196 square yards) complete in place with a minimum of 95 percent growth with a 2 1/2 inch (62.5 mm) stand of grass.

602S.9 Payment

The work performed and materials furnished and measured as provided under "Measurement" will be paid for at the unit bid price for Bermuda Block Sodding", "St. Augustine Block Sodding", "Bermuda Mulch Sodding" or "Other Approved Grass Sodding". The prices shall each represent full compensation for completion of the work including all water applications, rolling, pegging and fertilizer as indicated on the Drawings.

Payment will be made under one of the following:

Pay Item No. 602S-A:	Bermuda Block Sodding	Per Square Yard.
Pay Item No. 602S-B:	St. Augustine Block Sodding	Per Square Yard.
Pay Item No. 602S-C:	Bermuda Mulch Sodding	Per Square Yard.
Pay Item No. 602S-D:	Grass Sodding	Per Square Yard.

End

SPECIFIC CROSS REFERENCE MATERIALS	
Specification 602S, "Sodding for Erosion Control"	
City of Austin Land Development Code	
Designation	Description
Chapter 4-2, Art. II	Emergency and Peak Day Water Use Management
City of Austin Standard Specification Items	

Designation	Description
Item No. 606S	Fertilizer
City of Austin Land Development Code	
Designation	Description
Section 6-4-52	Water Use Management Plan Established
Section 6-4-53	Applicability
Section 6-4-54	Compliance Required
Section 6-4-63	Permanent Water Use Restrictions
Section 6-4-64	Water Conservation Stage One Regulations
Section 6-4-65	Water Conservation Stage Two Regulations
Section 6-4-81	Variance
Section 6-4-92	Penalty
Section 15-9-37(D)	Customer's Responsibilities
Section 15-9-101(B)	Basis for Termination of Service

RELATED CROSS REFERENCE MATERIALS

Specification 602S, "Sodding for Erosion Control"

City of Austin Standard Specification Items

Designation	Description
Item No. 110S	Street Excavation
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 132S	Embankment
Item No. 601S	Salvaging and Placing Topsoil
Item No. 604S	Seeding for Erosion Control
Item No. 608S	Planting
Item No. 610S	Preservation of Trees and Other Vegetation

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

Designation	Description
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 160	Furnishing and Placing Topsoil
Item No. 162	Sodding for Erosion Control
Item No. 164	Seeding for Erosion Control
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 204	Sprinkling

Sodding for Erosion Control

**SPECIAL PROVISION To
Standard Specification Item No. 602S (Version 06-16-08)
Sodding for Erosion Control**

These special provisions serve to modify, add to, and/or delete from the City of Austin Standard Technical Specification Item No. 602S: Sodding for Erosion Control, dated 6-16-2008. Any item, paragraph, article, or work contained therein unless specifically modified, added to or deleted herein shall apply where applicable.

Article 602.2 Submittals

DELETE the existing paragraph in its entirety and replace with the following:

The submittal requirements for this specification item shall include the identification of the type and source of sodding and type and rate of application of fertilizer and soil amendment, including the following:

A. Required Submittals Before Construction

- a. Source of sod and certification of variety.
- b. Installation and maintenance requirements as provided by supplying sod farm.
- c. Sample of sod stake proposed for use.

B. Required Inspections During Construction

- a. After fine grading is complete and all soil amendments (if any) have been added, before sod is placed. Contact Owner to schedule inspection.
- b. After sod installation.

Article 602.3 Materials

ADD the following to item A. Block and Mulch Sod:

- a. Buffalo grass sod.
- b. Hybrid Bermuda grass sod.
- c. Zoysia sod.

ADD the following:

F. Topsoil

Topsoil shall meet Standard Specification 601S or Topsoil Mix SS-612.

G. Landscape Stakes

Biodegradable landscape stakes (6"), such as GreenStake® or similar, shall be used to anchor sod in areas where slopes are 3:1 or greater.

Sodding for Erosion Control**Article 602.5 Construction Methods****A. General**

ADD the following:

- a. If compacted, soil in planting area shall be tilled to a maximum depth of six inches. In the critical root zone of trees, limit scarification to one inch.
- b. After tilling or scarification, add required amendment per soil test or install approved topsoil (601S) or topsoil mix (SS612) to four (4) inch depth minimum. The planting area should be smooth with no rocks or other materials over one inch.
- c. Turfgrass sod shall be harvested, delivered and installed within a 24-hour period, unless a suitable preservation method is approved before delivery.

B. Placement

ADD the following:

- a. Turfgrass sod shall be delivered to the site specified by Owner and off-loaded using equipment provided by the Contractor or turfgrass sod supplier. Palletized or large-roll turfgrass sod shall be off-loaded at the designated location at the installation site.
- b. Any sod used in areas subject to concentrated water flow, regardless of slope, shall be staked with biodegradable landscape stakes installed per manufacturer's specification. Sod on all slopes exceeding 3:1 shall be staked.
- c. Roll prepared planting bed with hand roller to approximately 80% compaction before placement of sod.
- d. All sod shall be installed the day it is delivered.

602.6 Block Sodding

DELETE the fifth sentence in its entirety and replace with the following:

Each piece of sod should be pegged/staked at the ends of the strips and in the center, or every 3-4 feet if the sod strips are long with "biodegradable landscape stakes" driven through the sod blocks into firm earth sufficiently close to hold the block sod firmly in place.

Article 602.8 Measurement**A. Block and Mulch Sod:**

ADD the following item:

- a. 4" stand of buffalo grass in accordance with sod supplier's recommendation.

Sodding for Erosion Control

Article 602.9 Payment

Add the following:

Pay Item SP 602S-B Buffalo grass sod – per Square Yard

Pay Item SP 602S-C Hybrid Bermuda Grass sod – per Square Yard

Pay Item SP 602S-D Zoysia grass sod – per Square Yard

End

**SPECIAL SPECIFICATION 603
Irrigation System (Temporary)****603.1 Description**

This item shall consist of all materials, labor, equipment, tools, and incidentals necessary to perform the work of irrigation system installation as specified in this section and related documents. These specifications relate to the installation phase (described in Items No. 602S, 604S and 608S, 609S, and their Special Provisions), and to the following maintenance phase as required.

The Specifications indicate and specify a complete and efficient landscape irrigation system which will operate in accordance with the specified equipment manufacturer's recommendations and with state and local codes and regulations. Items not specified, but found to be necessary for a complete system, shall be furnished under this Contract.

The irrigation system will be temporary. Equipment may be installed above or below ground depending on the jurisdiction of the City land where the system will be installed. City of Austin Parks and Recreation Department (PARC) policy requires subsurface installation in City of Austin Parkland, with in-place abandonment after the need for supplemental water ends. In Watershed Protection jurisdiction, irrigation installation shall be above-ground (unless otherwise directed) and equipment completely removed after one (1) year or when instructed to do so by the City of Austin project manager. In some cases, supplemental water may be provided by truck watering or hand watering (e.g., hose, gator bag), etc.

A. Scope of Work

Install a complete and efficient landscape irrigation system which will operate in accordance with the specified equipment manufacturer's recommendations and with state and local codes and regulations. Above ground piping is acceptable except on City of Austin Parkland where all pipes must be buried and left in place after the termination of temporary irrigation. The Contractor shall contact the Owner to verify the nature of the installation (i.e., surface or subsurface).

B. Qualification of Installer

A Texas-licensed landscape irrigator in good standing, approved by the Owner or his agent, with a minimum of 5 years continuous experience in installing systems of this type, and who is regularly engaged in installing landscape irrigation systems shall be employed for this Work.

603.2 Permits and Inspections

The Contractor shall obtain necessary permits, tests, and inspections, and pay any related fees and taxes required by governing agencies.

604.3 Submittals

A. The submittal requirements for this specification item shall include:

1. Copy of Irrigator's license issued by the Texas Commission on Environmental Quality (TCEQ).

2. Watering schedule comprising a chart listing zone number, zone flow (gpm), run time (minutes/month), type of vegetation irrigated per zone (e.g., trees, bunch grasses), and type of emission device per zone (e.g., bubblers, rotors).
3. In the event of mandated watering restrictions, provide a completed variance request approved by Austin Water Utility.
4. As-built irrigation plan showing all emission devices, valves, controller, backflow prevention device, and sized pipes.
5. Completed irrigation system maintenance checklist (Attachment A).

603.4 Damage to Property

- A. Repair or replace any property damage inflicted in the course of the irrigation installation, without additional charge and before final payment. Included are damages to building, paving, structures, equipment, piping, pipe covering, utilities, sewers, walls, signs, sidewalks and landscaping.
- B. The Irrigation Installer is responsible for damage caused by leaks in the piping systems and shall make repairs without charge.
- C. The Irrigation Installer is not responsible for damage to the system caused by others but all such damage must be repaired so the system is fully functioning at all times.

603.5 Existing Conditions

- A. Field verify all existing site conditions. By bidding this Work, the Contractor acknowledges that they have satisfied themselves as to the nature of the Work and to the quality of surface and subsurface materials and obstacles insofar as this data is reasonably ascertainable from a site inspection. Failure of the Contractor to acquaint themselves with the available information will not relieve their responsibility of proper estimation of the difficulty or cost of successful performance of the Work.
- B. Contractor shall locate all utilities in work area before installation. Any damage to existing utilities occurring during irrigation installation requiring repair or replacement shall be the Contractor's responsibility. This replacement clause extends to existing trees and other landscape materials proposed for preservation.
- C. Verify water supply static pressure and volume as adequate before system installation. Report inadequacies immediately to the Owner or Irrigation Designer of record for resolution. In cases of high pressure, pressure reduction equipment shall be used.
- D. The irrigation installation shall account for elevation changes on the site as part of pressure considerations.
- E. Irrigation layout shall account for slope on a site. Pipes should run perpendicular to a slope where possible. For temporary irrigation systems, above ground pipes should be secured to slopes every 10 feet in a manner that does not create a safety hazard. Stake temporary, above ground lateral pipes at end points.
- F. Determine and verify the location and size of the irrigation meter to be used for this project. Contractor is responsible for the tap, for following state and municipal regulations regarding connection to the water supply, and for obtaining all required permits and inspections.

603.6 Materials

Provide all equipment and materials necessary to complete work. All materials and equipment shall be new and unused, except for Yelomine pipe which is manufactured for reuse.

A. Pipe and Tube

1. Irrigation lines: Polyvinyl chloride pipe (PVC): rigid, un-plasticized PVC pipe, extruded from virgin parent material. Provide pipe that is homogenous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles and dents. Purple pipe shall be used when non-potable water is used to irrigate a site.
 - (a) Lateral: Class 200 (SDR 21).
 - (b) Mainline: Schedule 40 PVC; Yelomine (ASTM D2241); or C900/RJ PVC.
 - (c) Sleeves: Schedule 40 PVC (4"); SDR Class 200 (<4").
 - (d) Reference Standards: ASTM 1785-99, ASTM D2241-09, ASTM D2564-12, ASTM D2855-96(2010).
2. Velocity: The irrigation system must be designed and installed so that the flow of water in the pipe will not exceed a velocity of five (5) feet per second.

B. Connections

1. PVC Fittings: Use PVC molded fittings of the same material and pressure rating or schedule as the adjoining PVC pipe. Use fittings suitable for solvent weld, slip-joint ring tight seal, or screwed connections, as required, to properly join PVC pipe.
2. Use PVC solvent primer (color-treated) on all PVC joints in preparation for of the solvent weld.
3. Use solvent cement of a type approved by the pipe manufacturer on all PVC connections. Cement must be National Sanitation Foundation (NSF) approved and meet ASTM D2564-12 specifications.

C. Swing Joints

1. All risers and swing joint nipples shall be unplasticized polyvinyl-chloride, Schedule 80, threaded pipe.

D. Valves

1. Isolation Valves – threaded or bolted flange attachments:
 - (a) Install isolation valve between the water meter and backflow prevention device. This valve shall be iron body gate valve with resilient seat, non-rising stem with square key on 2-inch or larger.
 - (b) Where required, install an isolation valve upstream of each remote control valve. Isolation valves upstream of remote control valves can be plastic ball valve construction.
2. Remote Control Valves:
 - (a) Electric control valves shall be electrically operated, normally closed, diaphragm type, and be installed following published recommendations of the manufacturer.
 - (b) Valves shall be slow closing and opening.
 - (c) Valves shall have manual flow control and manual bleed.

3. Quick Coupling Valves:

- (a) Where required, provide a quick coupler valve with 2-piece heavy cast bronze body and rubber cover. Provide single-lug bronze keys with compatible swivel hose ends.
- (b) Coupler shall be in a covered purple valve box.
- (c) Install an isolation valve immediately upstream of each quick coupler.

E. Gate Valves

- 1. As manufactured by Nibco, or approved equal.

F. Check Valves:

- 1. In-head check valves shall be installed next to paved areas where elevation differences may cause low head drainage.

G. Backflow Prevention Devices

- 1. Provide a Double Check Backflow Prevention (DCA) or Reduced Pressure Backflow Prevention Device (RPZ) as noted in the plans.
- 2. Backflow prevention assembly shall consist of a bronze body, 909 Celcon check seats, stainless steel relief valve seats and bronze test cocks. All internal parts are of corrosion resistant materials.
- 3. Backflow prevention assembly will be constructed so that all internal parts can be serviced without removing the device from the line. These assemblies are rated to 175 psi water working pressure and water temperatures from 32°F to 140°F.
- 4. All backflow devices must be tested by a Licensed Backflow Prevention Device Tester.
- 5. Backflow device may be in an enclosure, appropriately located and sized to ensure accessibility for testing.

H. Valve Boxes

- 1. Provide plastic valve box for enclosure of all valves, ten (10) inch minimum or larger.

I. Gravel

- 1. Provide gravel as noted in plans and details.

J. Emission Devices

- 1. Provide new heads and nozzle assemblies as manufactured by Rainbird, Hunter, or approved equal.
- 2. Provide drip tubing by Netafim or Rainbird, or approved equal, or as specified in the plans.
- 3. All emission devices within a zone must irrigate at the same precipitation rate (matched precipitation rate). Emission devices of different types (i.e., spray head, bubblers, drip tubing) shall not be used together within the same zone.

K. Controller

- 1. A weather-based ET controller is typically required per City of Austin code for irrigation systems, although for temporary irrigation systems, a battery operated controller such as the Hunter Node is acceptable.

2. An automatic rain shut-off device (wired or wire-less) shall be associated with the controller. It must terminate operation of the irrigation system after not more than one-half inch rainfall. This sensor must be mounted in an open location, not obscured by tree branches, roofs, and other overhead obstructions.
3. The controller must be in a secure, weather and vandal resistant enclosure mounted in a location approved by the Owner.
4. Seasonal Water Schedule: one copy of the schedule shall be placed in a plastic sleeve inside the controller enclosure and one copy shall be provided to the Owner. Where there is no controller enclosure on site, the schedule shall be provided to the City of Austin project manager. In the event of mandated water restrictions, the controller shall be set according to the restrictions mandated by the regulatory agency and kept in compliance until the restrictions change. It may be possible to water outside the mandated schedule providing that the appropriate variance is obtained from the City of Austin Water Utility.

L. Pressure Regulation

1. The irrigation system shall be designed and installed to operate within adequate pressure conditions. Available static pressure shall be determined by the Contractor before installation.
2. If available static pressure is excessive, the Contractor shall install pressure reducing valve.
3. Pressure reducing valves must be installed in valve boxes.

603.7 Construction/Maintenance Methods

Provide all construction equipment and methods required to complete work.

A. System Design and Layout

1. Water Supply: Verify location and source of the water meter or tap for irrigation. Perform tests as needed to verify the pressure and volume are adequate to run the system as designed and with full, even and complete coverage. If volume and pressure are less than 50 gpm and 60 psi respectively, notify the Owner or Irrigation designer immediately before proceeding with the work. When necessary, supplemental water, in addition to the permanent and/or temporary sources, can be provided via water truck or other. This may be needed during times of mandatory water restrictions to provide sufficient water to the landscape.
2. Mainline: For purposes of this contract, a pay item called "P.O.C. (point of connection) to irrigation field is included. This is primarily related to temporary irrigation where the water source is a fire hydrant, especially where the hydrant is located some distance from the field of irrigation.
3. Standard Installation: Perform all Work and provide material in accordance with the local codes and ordinances in force at the job site. Where provisions of these Specifications exceed such requirements, these specifications shall govern.

B. Layout

1. Installer is responsible for locating valves, piping and fittings relative to existing conditions as the Drawings may show schematic layout only.
2. If a discrepancy in the size and shape of areas to be watered becomes apparent in the Drawings at the time of installation, such discrepancy shall be discussed with the Irrigation designer before commencement of the installation.
3. Work shall not proceed until design changes have been approved.

4. Should such changes create extra cost, a Change Order for extra compensation shall be obtained in writing from the Owner before commencing Work.
5. Should such changes create a savings in cost, a written reduction in the contract price shall be approved by the Owner in writing before commencing Work.
6. All materials shall be installed in strict accordance to the manufacturer's installation specifications.
7. All layout is to be based on final locations of planting beds, tree locations, etc. Coordinate with landscape contractor before installing these areas.
8. Hydrozoning is required. Plants of different water requirement, and those irrigated with different emission devices (e.g., spray heads vs. rotors) shall be on separate zones, including tree bubblers. Drip and spray irrigation must not be on common zones.
9. The maximum spacing between emission devices must not exceed the radius of throw recommended by the manufacturer.
10. **The Contractor shall install required irrigation before placement of all plant materials and before installation of salvaged or imported topsoil.**

C. Excavation

Excavate as necessary to meet local codes and to complete work.

1. Trenches

- (a) Hand trench only in the critical root zone¹ of large (>18 caliper inches) existing trees and their root systems, taking care to work piping around roots where possible rather than cutting. Do not cut any roots larger than one inch diameter.
- (b) Dig trenches no wider than necessary to lay pipe.
- (c) Provide trenches of sufficient depth to provide minimum cover above the top of pipe according to manufacturer's specification. If no published specification minimum depth, coverage of 12 inches over lateral lines and 15 inches over main lines. Clearly and visibly flag all open trenches, hole and depressions until adequately filled or repaired.
- (d) A minimum of two inches of sand bedding may be installed completely around the pipe. Fill to match adjacent grade elevations with approved sandy loam backfill free from rocks and debris in layers not greater than six inches depth.

D. Pipe Fitting and Assembly

1. Keep ends of pipe securely closed when Work is not in operation to prevent water and other matter from entering the lines.
2. The routing of the pressure supply lines shall avoid large tree roots and other existing items. Deviate where necessary and install lines to provide coverage without off-setting assemblies from pressure supply lines.
3. Piping Erection:
 - (a) General. The Installer is responsible for being familiar with any and all methods of assemblage, joining and installation of various types of pipe to be used. Adhere in strict accordance with the manufacturer's recommendations.
 - (b) Polyvinyl chloride (PVC) pipe:
 - (1) Exercise care in handling, loading, unloading and storing plastic pipe and fittings.

¹ A tree's critical root zone roughly corresponds to the edge of its dripline.

(2) Make all changes in direction of pipe with fittings, not by bending pipe.

(3) Solvent joints. Make sure pipe is cut square and all connecting surfaces are properly cleaned and dry. Apply an even coat of solvent to the outside and inside of the fitting. Insert the pipe quickly into the fitting and turn pipe approximately 1/4 turn to distribute the solvent and remove air bubbles. Hold the joint for approximately 15 seconds so the fitting does not push off the pipe. Using a clean rag, wipe off all excessive solvent to prevent weakening at joint. Exercise care in going to the next joint so that the pipe is not twisted, thereby disturbing the last completed joint. Allow at least 15 minutes set-up time for each solvent welded joint before moving.

E. Valves

1. Install valves in 10-inch minimum size plastic valve boxes.
2. Isolation valves shall be set vertically.
3. Remote control valves should be adjusted to provide the proper pressure at the emission device.

F. Backflow Prevention Devices

1. Install backflow prevention device as per requirements of City of Austin Uniform Plumbing Code and Austin Water Utility at location determined by Owner and shown on Drawings.
2. Provide testing and coordinate inspection of the backflow preventer as required by state statute and as per City of Austin requirements.

G. Sleeves

1. Provide new sleeves for all locations as needed at pavement or walls before their installation. Install sleeves before the installation of pavement or walls. Extend sleeve pipes 12 inches beyond edges of pavement and cap. Mark locations of sleeves with paint of the pavement or other approved marking.
2. For areas of existing pavement, install sleeves by boring under the hardscape. Where boring is unfeasible, pavement can be cut and patched in a method acceptable to the Owner.
3. Sleeves shall be at least twice the diameter of the pipe or wire to be encased.

H. Emission Devices

1. Spray heads shall be set back at least six (6) inches from impervious surfaces. In the City of Austin right-of-way, sprays heads shall be set back two (2) feet from the back of curb.
2. No spray irrigation heads shall be installed on areas less than six (6) feet wide. Instead, drip irrigation is permitted.
3. Sprinklers shall not directly overspray onto non-irrigated areas (e.g., parking lots, sidewalks).
4. Tree bubblers shall be placed at the edge of the tree root ball.
5. All emission devices shall be installed, where applicable, in plumb position, with proper spacing and in locations shown on the plans.

I. Controller

1. A weather-based ET controller and associated rain shut-off sensor shall be mounted in locations approved by the Owner.
2. The controller must be in a secure, weather and vandal resistant, lockable enclosure mounted in a location approved by the Owner.
3. Contractor shall put a sticker on the controller with their company contact information.
4. For temporary irrigation system where access to electricity is a limiting factor, a battery operated controller such as the Hunter Node is acceptable.

J. Control Wiring

1. Control wire shall be of the size and type recommended by the valve manufacturer, with a minimum gauge of 14 AWG.
2. Waterproof connectors shall be used at each splice and placed in a sufficiently-sized valve box.

K. Watering Schedule

1. Contractor shall provide the Owner with a chart listing information for each zone, including precipitation rate, gallons per minute (gpm), and run time for each season.

L. Inspection, Testing and Approval

1. Do not enclose or cover any Work until it has been inspected, tested and approved per local codes. Where required, contact the Owner Architect to arrange an inspection.
2. Hydrostatic Piping Test:
 - (a) In the presence of the Owner, hydrostatically test the mainline piping system. Test to a minimum psi of 100. Test period shall not be less than 4 hours. Pipe may be tested in sections to expedite the work.
 - (b) Test is acceptable if no leakage occurs during test period.
 - (c) Repair all leaks and retest system for another 4-hour period if necessary. Continue this procedure until all leaks are repaired.
3. Operation Test:
 - (a) After all equipment is installed, test the system for coverage, flow and pressure in the presence of the Owner.
 - (b) Test is acceptable if system operates satisfactorily, with adequate pressure and flow and if all irrigated areas are receiving proper coverage with no overspray onto pavement or buildings.
 - (c) After all required adjustments are made, coordinate with Owner to obtain an inspection by a City of Austin Irrigation Inspector, if required.
4. Final Acceptance:
 - (a) Final Acceptance may be given when all punchlist items are satisfactorily completed and, if required, a City of Austin Irrigation Inspector has approved the job (with all comments acceptable addressed).

M. Cleanup

1. Maintain a clean work area during the progress of the Work within reasonable limits of the installation area. Periodically remove all rubbish, debris, etc., from Work site and dispose legally.

2. Upon completion of the Work, remove all construction and installation equipment from the premises; make ground surface level where it has been affected by irrigation system installation; and remove excess materials, rubbish and debris.
3. Immediately replace and thoroughly hand water any plant material and groundcover which may be displaced during installation.

603.4 Measurement

Work and acceptable material for "Irrigation System" will be measured as a complete system in working order with all the elements necessary to fulfill the landscape design intent.

603.5 Payment

The work performed will be paid for at the unit price bid for "Irrigation System", which price shall be full compensation for furnishing and installing all components; flushing and testing waterlines; furnishing and operating equipment; and labor, tools, and incidentals.

Payment will be made under:

Pay Item No. 603-A1:	Temporary Irrigation System, above-ground installation	Per SF
Pay Item No. 603-A2:	Temporary Irrigation System, above-ground removal	Per SF
Pay Item No. 603-B:	Temporary Irrigation System, subsurface installation	Per SF
Pay Item No. 603-C:	Temporary Irrigation System - Maintenance & Repair	Per HR
Pay Item No. 603-D:	Temporary Irrigation - Hand-watering with water truck, filling gator bags	Per HR
Pay Item No. 603-E:	Point of Connection to Irrigation Field, subsurface	Per LF
Pay Item No. 603-F:	Point of Connection to Irrigation Field, above-ground	Per LF
Pay Item No. 603-G:	Water	Per Kgal/yr

END

ATTACHMENT A to SS603—IRRIGATION SYSTEM MAINTENANCE CHECKLIST

Installation Completion Date: _____

Project Name: _____

CIP/SP No.: _____

Address: _____

The following items have been provided and explained to the irrigation system owner or system owner's representative.

- ☐ The manufacturer's manual for the controller.
- ☐ A seasonal watering schedule.
- ☐ A list of components that require maintenance and the recommended frequency of maintenance is attached.
- ☐ A permanent sticker has been attached to the controller indicating the warranty period for the irrigation system and contact information.
- ☐ The corrected or re-drawn design plans indicating the actual installation and components of the system.
- ☐ Location and operation of the isolation valve.

Irrigation system owner/representative_____
Date

This irrigation system has been installed in accordance with all applicable state and local laws, ordinances, rules, regulations or orders. I have tested the system and determined that it has been installed according to the Irrigation Plan and is properly adjusted for the most efficient application of water at this time.

Irrigator's Signature_____
Date_____
Irrigation Technician Signature_____
Date

Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ) (MC-178), P.O. Box 13087, Austin, Texas 78711-3087. TCEQ's web site is: www.tceq.state.tx.us

ATTACHMENT A to SS603—IRRIGATION SYSTEM MAINTENANCE CHECKLIST (continued)**Components Requiring Maintenance****Irrigation System:**

- ☐ Winterization
- ☐ Return to normal service

Sprinkler Heads:

- ☐ Missing heads
- ☐ Broken heads
- ☐ Clogged heads
- ☐ Tilted heads
- ☐ Heads spraying in wrong direction
- ☐ Heads too far in or above the ground or vegetation
- ☐ Water constantly seeping from head(s)
- ☐ Water spraying in a fine mist
- ☐ Uneven and incomplete sprinkler coverage
- ☐ Blocked or misdirected spray pattern
- ☐ Water spray onto sidewalks, decks, buildings, driveways or the street

Controller:

- ☐ Controller cabinet lock broken
- ☐ Loose wires (Take care with wires of 110 volt)
- ☐ Worn wires (Take care with wires of 110 volt)
- ☐ Dead or old battery
- ☐ Run time(s) and day incorrect
- ☐ Rain or moisture sensor (or other technology) disconnected from the controller or ground wire
- ☐ Controller not programmed for the appropriate season

Valves:

- ☐ Broken or missing valve boxes and covers
- ☐ Faulty valve electrical connections or dead batteries

Back Flow Prevention Device:

- ☐ Not tested per requirements

Drip/Micro Irrigation:

- ☐ Emitters unconnected from flex line
- ☐ Flex line unconnected from riser
- ☐ Micro adjustment nozzle unconnected from flex line and nozzle not intact
- ☐ Filter strainer clogged
- ☐ Automatic flush valves not operating properly
- ☐ Operational pressure is too high

ITEM NO. 604S
SEEDING FOR EROSION CONTROL

604S.1 Description

This item shall govern the preparation of a seed bed to the lines and grades indicated on the Drawings, sowing of seeds, fertilizing, mulching with straw, cellulose fiber wood chips, recycled paper mulch and other management practices along and across such areas as indicated in the Drawings or as directed by the Engineer or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, inch-pound units are given preference with SI units shown within parentheses.

604S.2 Submittals

The submittal requirements for this specification item shall include:

- A. Identification of the type, source, mixture, PLS and rate of application of the seed.
- B. type of mulch.
- C. type of tacking agent.
- D. type and rate of application of fertilizer.

604S.3. Materials

A. **Seed.** All seed must meet the requirements of the Texas Seed Law including the labeling requirements for showing pure live seed (PLS), name and type of seed. The seed furnished shall be of the previous season's crop and the date of analysis shown on each bag shall be within nine months of the time of delivery to the project. Each variety of seed shall be furnished and delivered in separate bags or containers. A sample of each variety of seed shall be furnished for analysis and testing when directed by the Engineer or designated representative.

The amount of seed planted per acre (hectare) shall be of the type specified in sections 604S.5 and 604S.6.

- B. **Water.** Water shall be clean and free of industrial wastes and other substances harmful to the growth of grass or the area irrigated.
- C. **Top soil.** Top soil shall conform to Standard Specification Item No. 601S.3(A).
- D. **Fertilizer.** The fertilizer shall conform to Standard Specification Item No. 606S, "Fertilizer".
- E. **Straw Mulch or Hay Mulch.** Straw Mulch shall be oat, wheat or rice straw. Hay mulch shall be prairie grass, Bermuda grass, or other hay approved by the Engineer or designated representative. The straw or hay shall be free of Johnson grass or other noxious weeds and

foreign materials. It shall be kept in a dry condition and shall not be molded or rotted.

F Tacking Agents. The tacking agent shall be a biodegradable tacking agent, approved by the Engineer or designated representative.

G. Cellulose Fiber Mulch (Natural Wood). Cellulose Fiber Mulch shall be natural cellulose fiber mulch produced from grinding clean whole wood chips. The mulch shall be designed for use in conventional mechanical planting, hydraulic planting of seed or hydraulic mulching of grass seed, either alone or with fertilizers and other additives. The mulch shall be such, that when applied, the material shall form a strong, moisture-retaining mat without the need of an asphalt binder.

H. Recycled Paper Mulch. Recycled paper mulch shall be specifically manufactured from post-consumer paper and shall contain a minimum of 85% recycled paper content by weight, shall contain no more than 15% moisture and 1.6% ash, and shall contain no growth inhibiting material or weed seeds. The recycled paper mulch shall be mixed with grass seed and fertilizer for hydro-seeding/mulching, erosion control, and a binder over straw mulch. The mulch, when applied, shall form a strong, moisture-retaining mat of a green color without the need of an asphalt binder.

604S.4 Construction Methods

A. Preparing Seed Bed. After the designated areas have been rough graded to the lines, grades and typical sections indicated in the Drawings or as provided for in other items of this contract and for any other soil area disturbed by the construction, a suitable seedbed shall be prepared. The seedbed shall consist of a minimum of either 6 inches (150 millimeters) of approved topsoil or 6 inches (150 millimeters) of approved salvaged topsoil, cultivated and rolled sufficiently to reduce the soil to a state of good tilth, when the soil particles on the surface are small enough and lie closely enough together to prevent the seed from being covered too deeply for optimum germination. The optimum depth for seeding shall be 1/4 inch (6 millimeters). Water shall be gently applied as required to prepare the seedbed prior to the planting operation either by broadcast seeding or hydraulic planting. Seeding shall be performed in accordance with the requirements hereinafter described.

B. Watering. All watering shall comply with City Ordinances. Broadcast seeded areas shall immediately be watered with a minimum of 5 gallons of water per square yard (22.5 liters of water per square meter) or as needed and in the manner and quantity as directed by the Engineer or designated representative. Hydraulic seeded areas and native grass seeded areas shall be watered commencing after the tackifier has dried with a minimum of 5 gallons of water per square yard (22.5 liters of water per square meter) or as needed to keep the seedbed in a wet condition favorable for the growth of grass.

Watering applications shall constantly maintain the seedbed in a wet condition favorable for the growth of grass. Watering shall continue until the grass is uniformly 1 1/2 inches (40 mm) in height and accepted by the Engineer or designated representative. Watering can be postponed immediately after a 1/2 inch (12.5 mm) or greater rainfall on the site but shall be resumed before the soil dries out.

Availability of water from the Austin Water Utility will be limited as stated under the Water Conservation Standard, City of Austin Land Development Code Chapter 6-2, Article II, "Water

Use Management Plan Established".

The use of potable water will be restricted as stated in City of Austin Land Development Code Sections 6-4-73, 6-4-54, 6-4-63, 6-4-64, 6-4-65, 6-4-81, 6-4-92, 15-9-37(D) and 15-9-101(B).

604S.5 Non-Native Seeding

A. Method A - Broadcast Seeding. The seed or seed mixture in the quantity specified shall be uniformly distributed over the prepared seed bed areas indicated on the Drawings or where directed by the Engineer or designated representative. If the sowing of seed is by hand, rather than by mechanical methods, the seed shall be sown in two directions at right angles to each other. If mechanical equipment is used, all varieties of seed, as well as fertilizer, may be distributed at the same time, provided that each component is uniformly applied at the specified rate. After planting, the planted area shall be rolled with a corrugated roller of the "Cultipacker" type. All rolling of the slope areas shall be on the contour.

Seed Mixture and Rate of Application for Broadcast Seeding:

From September 15 to March 1, seeding shall be with a cool season cover crop (see Table 4) at a rate of 1.5 pounds per 1000 square feet (0.75 kilograms per 100 square meters). Cool season cover crops are not permanent erosion control. The cool season cover crops shall be mowed (scalped) to a height of less than one (1) inch after March 1, and the area shall be re-seeded in accordance with the seeding rate for March 1 to September 15, below.

From March 1 to September 15, seeding shall be with hulled Bermuda Grass at a rate of 2 pounds per 1000 square feet (1.0 kilograms per 100 square meters) with a PLS = 0.83. Fertilizer shall be applied and shall conform to Item No. 606S, "Fertilizer". Bermuda grass is a warm season grass and is therefore considered permanent erosion control once established.

B. Method B - Hydraulic Planting. The seedbed shall be prepared as specified above and hydraulic planting equipment, which is capable of placing all materials in a single operation, shall be used.

March 1 to September 15

Hydraulic planting mixture and minimum rate of application pounds per 1000 square feet (kilograms per 100 square meters):

Hulled Bermuda Seed (PLS=0.83)	Fiber Mulch		Soil Tackifier
	Cellulose	Wood	
1 Lbs/1000 ft ² (0.5kgs/100 m ²)	45.9 Lbs/1000 ft ² (22.5kgs/100 m ²)		1.4 Lbs/1000 ft ² (0.7kgs/100 m ²)
		57.4 Lbs/1000 ft ² (28.0kgs/100 m ²)	1.5 Lbs/1000 ft ² (0.75kgs/100 m ²)

September 15 to March 1

Use 1.5 pounds per 1000 square feet (0.75 kilograms per 100 square meters) of cool season

cover crop (see Table 4). Cool season cover crops are not permanent erosion control. The cool season cover crops shall be mowed to a height of less than one (1) inch after March 1, and the area shall be re-seeded in accordance with the seeding rate for March 1 to September 15, above.

604S.6 Native Grass Seeding

The seedbed shall be prepared as specified above. The seed mixture and the rate of application shall be as follows:

Table 2: Native Grasses			
Common Name	Botanical Name	Application rates	
		Lbs/1000 feet ²	kg/ 100 meter ²
Indiangrass	<i>Sorghastrum nutans</i>	0.15	0.075
Sideoats grama	<i>Bouteloua curtipendula</i>	0.2	0.10
Green sprangletop	<i>Leptochloa dubia</i>	0.15	0.075
Buffalo Grass	<i>Buchloe dactyloides</i>	0.25	0.125
Little Bluestem	<i>Schizachyrium scoparium</i>	0.2	0.10
Blue Grama Grass	<i>Bouteloua gracilis</i>	0.15	0.075
Canada Wild Rye	<i>Elymus canadensis</i>	0.2	0.10
Eastern gamagrass	<i>Tripsacum dactyloides</i>	0.25	0.125
Purple Three-Awn	<i>Aristida purpurea</i>	0.15	0.075
Switchgrass	<i>Panicum virgatum</i>	0.1	0.05
Bushy Bluestem	<i>Andropogon glomeratus</i>	0.1	0.05
Big Bluestem	<i>Andropogon gerardii</i>	0.1	0.05
Total Grass Seeding Rate		2.0	1.0

Table 3: Native Wildflowers			
Common Name	Botanical Name	Application rates	
		Lbs/1000 feet ²	kg/ 100 meter ²
Black-Eyed Susan	<i>Rudbeckia hirta</i>	0.05	0.025
Bundleflower	<i>Desmanthus illinoensis</i>	0.05	0.025
Scarlet Sage	<i>Salvia coccinea</i>	0.10	0.05
Pink Evening Primrose	<i>Oenothera speciosa</i>	0.05	0.025
Phlox	<i>Phlox Drummondii</i>	0.05	0.025
Coreopsis	<i>Coreopsis tinctoria</i>	0.05	0.025
Greenthread	<i>Thelesperma filifolium</i>	0.05	0.025
Purple Prairie Clover	<i>Petalostemum purpurea</i>	0.05	0.025
Cutleaf Daisy	<i>Engelmannia pinnatifida</i>	0.05	0.025
Partridge Pea	<i>Cassia fasciculata</i>	0.1	0.05
Indian Blanket	<i>Gaillardia pulchella</i>	0.1	0.05
Bluebonnet	<i>Lupinus texensis</i>	0.15	0.075
Mexican Hat	<i>Ratibida columnaris</i>	0.05	0.025
Maximilian Sunflower	<i>Helianthus maximiliani</i>	0.1	0.05
Total Wildflower Seeding Rate		1.0	0.5
Total Warm Season Seeding Rate (Grass &		3.0	1.5

Wildflowers)			
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Table 4: Cool Season Cover Crop			
Common Name	Botanical Name	Application rates	
		Lbs/1000 feet ²	kg/ 100 meter ²
Wheat	Triticum aestivum	0.5	0.25
Oats	Avena sativa	0.5	0.25
Cereal Rye Grain	Secale cereale	0.5	0.25
Total Cool Season Cover Crop Seeding Rate		1.5	0.75
Total Cool Season Seeding Rate (Grass, Wildflowers, & Cover Crop)		4.5	2.25

Species substitution as necessary due to availability shall be approved by the Engineer or designated representative. Watering and fertilizer application shall follow procedures outlined above or as otherwise specified on the Drawings.

Seed shall be applied by broadcast, hydromulch, blown compost, or drill method and shall be distributed evenly over the topsoil areas. Mulching shall immediately follow seed application for broadcast and hydromulch applications.

September 15 to March 1

Add 1.5 pounds per 1000 square feet (0.75 kilograms per 100 square meters) of cool season cover crop (see Table 4) to grass and wildflower mixture.

604S.7 Mulch

A. Straw Mulch.

Straw mulch shall be spread uniformly over the area indicated or as designated by the Engineer or designated representative at the rate of 2 to 2 1/2 tons of straw per acre (4.5 to 5.6 megagrams of straw per hectare). The actual rate of application will be designated by the Engineer or designated representative. Straw may be hand or machine placed and adequately secured.

B. Fiber Mulch.

Cellulose and wood fiber mulch shall be spread uniformly over the area indicated or as designated by the Engineer or designated representative at the rate of 45 to 80 lbs. per 1000 square feet (22.5 to 40 kilograms per 100 square meters).

C Recycled Paper Mulch.

Recycled paper mulch shall be spread over the area indicated on the Drawings or as designated by the Engineer or designated representative at a rate that will provide 100% coverage.

D. Shredded Brush Mulch.

Small brush or tree limbs except Juniper, which have been shredded, may be used for mulching Native Grass seeding.

604S.8 Measurement

Work and acceptable material for "Seeding for Erosion Control" will be measured by the square yard (meter: 1 meter equals 1.196 square yards) or by the acre (hectare: 1 hectare equals 2.471 acres), complete in place, with a minimum of 95 percent coverage for the non-native mix, and 95 percent coverage for the native mix. Bare areas shall not exceed 16 square feet (1.5 square meters), and the height of vegetation shall stand at a minimum of 1 1/2 inch (40 millimeters). Bare areas shall be re-prepared and reseeded as required to develop an acceptable stand of grass.

604S.9 Payment

The work performed and materials furnished and measured will be paid for at the unit bid price for "Seeding for Erosion Control" of the method specified on the Drawings and type of mulch. The unit bid price shall include full compensation for furnishing all materials, including all topsoil, water, seed, tackifier, fertilizer or mulch and for performing all operations necessary to complete the work.

All fertilizer will be measured and paid for conforming to Item No. 606S, "Fertilizer".

Payment will be made under one of the following:

Pay Item No. 604S-A:	Non-Native Seeding for Erosion Control Method, _____ Mulch Per Square Yard.
Pay Item No. 604S-B:	Non-Native Seeding for Erosion Control Method, _____ Mulch Per Acre.
Pay Item No. 604S-C:	Native Seeding for Erosion Control Method, _____ Mulch Per Square Yard.
Pay Item No. 604S-D:	Native Seeding for Erosion Control Method, _____ Mulch Per Acre.
Pay Item No. 604S-E:	Mulch, _____ Per Square Yard.
Pay Item No. 604S-F:	Mulch, _____ Per Acre.

End

SPECIFIC CROSS REFERENCE MATERIALS	
Specification Item 604S "Seeding for Erosion Control"	
City of Austin Technical Specifications	
Designation	Description

Item No. 130S	Borrow
Item No. 606S	Fertilizer
City of Austin Land Development Code	
Designation	Description
Section 6-4-52	Water Use Management Plan Established
Section 6-4-53	Applicability
Section 6-4-54	Compliance Required
Section 6-4-63	Permanent Water Use Restrictions
Section 6-4-64	Water Conservation Stage One Regulations
Section 6-4-65	Water Conservation Stage Two Regulations
Section 6-4-81	Variance
Section 6-4-92	Penalty
Section 15-9-37(D)	Customer's Responsibilities
Section 15-9-101(B)	Basis for Termination of Service

RELATED CROSS REFERENCE MATERIALS

Specification Item 604S "Seeding for Erosion Control"

City of Austin Technical Specifications

Designation	Description
Item No. 601S	Salvaging and Placing Topsoil
Item No. 602S	Sodding for Erosion Control
Item No. 605S	Soil Retention Blanket
Item No. 607S	Slope Stabilization
Item No. 608S	Planting

City of Austin Standards (Details)

Designation	Description
627S-1	Grass Lined Swale
633S-1	Landgrading

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

Designation	Description
Item No. 160	Furnishing and Placing Topsoil
Item No. 162	Sodding for Erosion Control
Item No. 164	Seeding for Erosion Control
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 169	Soil Retention Blanket
Item No. 180	Wildflower Seeding
Item No. 192	Roadside Planting and Establishment

**SPECIAL PROVISION To
Standard Specification Item 604S (Version 08-18-10)
Seeding for Erosion Control**

These special provisions serve to modify, add to, and/or delete from the City of Austin Standard Technical Specification Item No. 604S: Seeding for Erosion Control, dated 08/18/2010. Any item, paragraph, article, or work contained therein unless specifically modified, added to or deleted herein shall apply where applicable.

Article 604S.2 Submittals**604S.2 Submittals****A.**

ADD the following sentence:

Provide delivery tickets indicating the quantity of each type of seed delivered to the site.

B.

ADD the following sentence:

Submit an invoice showing certification of Hydromulch/seed mix as Bonded Fiber Matrix (BFM) or Fiber Reinforced Matrix (FRM).

ADD the following item:

E. List of types of seeding equipment proposed for use.

604S.3 Materials**C. Top Soil.**

ADD the following to the end of the sentence:

And/or Special Specification 612, Topsoil Mix, as directed by the Landscape Architect.

ADD the following item:

- I. Hydromulch.** Hydromulch for permanent vegetative stabilization materials may include:
 - a. Bonded Fiber Matrix (BFM): organic defibrated fibers and cross-linked hydro-colloidal tackifiers. Refer to ECM Table 1.4.7-C
 - b. Fiber Reinforced Matrix (FRM): organic defibrated fibers produced from grinding clean, whole wood chips, crimped interlocking fibers, cross-linked insoluble hydro-colloidal tackifiers and reinforced natural and/or synthetic fibers.

Article 604S.4 Construction Methods

Add the following sections:

C. Seeding.

Apply seed uniformly with a seed spreader, drill, cultipacker seeder or hydroseeder.

D. Protection of Seed Bed with Hydromulch or Soil Retention Blanket.

Newly-installed seeding for permanent re-vegetation must be protected by Hydromulch or soil retention blanket (refer to Standard Specification 605S Soil Retention Blanket) immediately after seeding.

1. Hydromulch

Permanent vegetative stabilization with Hydromulch shall comply with the requirements of ECM Table 1.4.7-C using either:

- (a) Bonded Fiber Matrix (BFM): 80% organic defibrated fibers and 10% tackifier (Refer to ECM Table 1.4.7-D for BFM properties), or
- (b) Fiber Reinforced Matrix (FRM): 65% organic defibrated fibers, 25% reinforcing fibers or less, and 10% tackifier (Refer to ECM Table 1.4.7-E for FRM properties).

604S.5 Non-Native Seeding**A. Method A. Broadcast Seeding.**

ADD the following sentence:

Apply seed uniformly at the specified rate with a seed spreader, drill, cultipacker seeder or hydroseeder.

Seed Mixture and Rate of Application for Broadcast Seeding:

DELETE the paragraph in its entirety and replace with the following:

From September 15...The cool season cover crops shall be mowed (scalped) as short as possible to suppress growth. Rake and remove excess thatch as required and install native seed mix (see SP609S for mix) directly into remaining cover crop stubble. For areas receiving Bermuda grass seed, the area shall be re-seeded in accordance with the seeding rate for March 1 to September 15, below.

From March 1 to September 15, seeding shall be with hulled Bermuda Grass at a rate of 1 pounds per 1000 square feet with a PLS = 0.83 and purity of 95%. Bermuda Grass seed shall only be planted where shown on the Drawings.

B. Method B - Hydraulic Planting.

ADD the following sentence at the end of the first paragraph:

For native seed applications, the Contractor shall rinse the hydroseed slurry tank with water three times to insure that no seed contamination occurs to the specified seed mixes.

DELETE the Table for Fiber Mulch and Soil Tackifier and replace with the following:

March 1 to September 15

For permanent vegetation, newly-installed seeding must be protected by hydromulch or soil retention blanket (refer to Standard Specification 605S Soil Retention Blanket) immediately after seeding. Protection of the seed bed shall occur in a manner that will allow seed germination and that encourage effective vegetative growth. Hydromulching shall comply with requirements of City of Austin, Environmental Criteria Manual (ECM) Section 1.4.0.

1. Hydromulch

Permanent vegetative stabilization with Hydromulch shall comply with the requirements of ECM Table 1.4.7-C using either:

- (a) Bonded Fiber Matrix (BFM): 80% organic defibrated fibers and 10% tackifier (Refer to ECM Table 1.4.7-D for BFM properties), or
- (b) Fiber Reinforced Matrix (FRM): 65% organic defibrated fibers, 25% reinforcing.

604S.6 Native Grass Seeding

REMOVE this section in its entirety – all native seeding will conform to SP-609S.

604S.7 Mulch

ADD the following items:

E. Bonded Fiber Matrix (BFM).

BFM shall be 80% organic defibrated fibers and 10% tackifier (Refer to ECM Table 1.4.7-D for BFM properties). It shall be spread uniformly over the area indicated in the Plans, to the manufacturer's recommended application rate and coverage.

F. Fiber Reinforced Matrix (FRM).

FRM shall be 65% organic defibrated fibers, 25% reinforcing fibers or less, and 10% tackifier (Refer to ECM Table 1.4.7-E for FRM properties). It shall be spread uniformly over the area indicated in the Plans, to the manufacturer's recommended application rate and coverage.

604S.9 Payment

ADD the following pay items:

Pay Item No. SP-604S-A1: Non-Native Seeding for Erosion Control Method, Seed Spreader, Per Square Yard.

Pay Item No. SP-604S-A2: Non-Native Seeding for Erosion Control Method, Drill or Cultipacker, Per Square Yard.

Pay Item No. SP-604S-A3: Non-Native Seeding for Erosion Control Method, Bonded Fiber Matrix Hydromulch or Fiber Reinforced Matrix, Per Square Yard.

SPECIAL PROVISION

SP604S Seeding for Erosion Control

REMOVE the following pay items:

Pay Item No. 604S-C: Native Seeding for Erosion Control Method, __Mulch Per Square Yard.

Pay Item No. 604S-D: Native Seeding for Erosion Control Method, __Mulch Per Acre.

Pay Item No. 604S-E: Mulch,____ Per Square Yard.

Pay Item No. 604S-F: Mulch,____ Per Acre.

End

**ITEM NO. 605S
SOIL RETENTION BLANKET****605S.1 Description**

This item shall govern the provision and placement of wood, straw or coconut fiber mat, synthetic mat, paper mat, jute mesh or other material as a soil retention blanket for erosion control on slopes or ditches or short-term or long-term protection of seeded or sodded areas indicated on the Drawings or as specified by the Engineer or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, inch-pound units are given preference with SI units shown within parentheses.

605S.2 Submittals

The submittal requirements for this specification item shall include the soil retention blanket material type and sample, evidence that the material is listed on TxDOT/TTI Approved Products List, one (1) full set of Manufacturer's literature and installation recommendations, and any special details necessary for the proposed application.

605S.3 Materials**A. Soil Retention Blankets**

All soil retention blankets must be listed on TxDOT Approved Products List or approved by the Engineer or designated representative.

The soil retention blanket shall be one (1) of the following classes and types as shown on the Drawings:

1. Class 1. "Slope Protection"
 - (a) Type A. Slopes 1:3 or flatter - Clay soils
 - (b) Type B. Slopes 1:3 or flatter - Sandy soils
 - (c) Type C Slopes steeper than 1:3 - Clay soils
 - (d) Type D Slopes steeper than 1:3 - Sandy soils
2. Class 2. "Flexible Channel Liner"
 - (a) Type E Short-term duration (Up to 2 years)
Shear Stress (t_d)
 - (b) Type F Short-term duration (Up to 2 years)

Shear Stress (t_d) 1 to 2 psf (48 to 96 Pa)

(c) Type G Long-term duration (Longer than 2 years)

Shear Stress (t_d) >2 to 96 to

(d) Type H Long-term duration (Longer than 2 years)

Shear Stress (t_d) 5 psf (239 Pa)

B. Fasteners

The fasteners shall conform to the recommendations of the manufacturer for the selected soil retention blanket.

605S.4 Construction Methods

A. General

The soil retention blanket shall conform to the class and type shown on the Drawings. The Contractor has the option of selecting an approved soil retention blanket conforming to the class and type shown on the Drawings which is included on the Approved Products List published by TxDOT/TTI Hydraulics and Erosion Control Laboratory.

B. Site Preparation

Prior to placement of the soil retention blanket, the seedbed area to be covered shall be relatively free of all clods and rocks over 1 1/2 inches (37.5 mm) in maximum dimension and all sticks or other foreign matter that will prevent close contact of the preparation mat with the soil surface. The area shall be smooth and free of ruts and other depressions. If the prepared seedbed becomes crusted or eroded as a result of rain or if any eroded places, ruts or depressions exist for any reason, the Contractor shall be required to rework the soil until it is smooth and to reseed or resod the area at the Contractor's own expense. After the area has been properly prepared, the blanket shall be laid out flat, even and smooth, without stretching or crimping the material.

C. Installation

The Soil Retention Blanket, whether installed as slope protection or as flexible channel liner in accordance with the TxDOT/TTI Approved Products List, shall be placed within 24 hours after seeding (Standard Specification Item No. 604S), sodding (Standard Specification Item No. 602S) or native grassland seeding and planting (Standard Specification Item No. 609S) erosion control operations have been completed, or as approved by the Engineer or designated representative. The soil retention blanket shall be installed and anchored in accordance with the Manufacturer's recommendations. The Contractor shall contact the Engineer or designated representative three (3) days prior to the installation of the soil retention blanket to allow for inspection of the installation by City of Austin personnel.

605S.5 Measurement

This work and acceptable material for "Soil Retention Blanket" will be measured by the square yard (square meter: 1 square meter is equal to 1.196 square yards) of surface area covered, complete in place.

605S.6 Payment

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit bid price for "Soil Retention Blanket" of the class shown on the Drawings or approved by the Engineer or designated representative. The unit price shall include full compensation for furnishing all materials, labor, tools, equipment and incidentals necessary to complete the work. Anchors, checks, terminal and wire staples will not be paid for directly, but will be included in the unit price bid for this specification item.

Payment will be made under the following:

Pay Item No. 605S-A: Soil Retention Blanket Class ____; Type ____ Per Square Yard.

End

<u>SPECIFIC CROSS REFERENCE MATERIALS</u>
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Specification 605S, "Soil Retention Blanket"
--

City of Austin Standard Specification Items

Designation	Description
Item No. 602S	Sodding for Erosion Control
Item No. 604S	Seeding for Erosion Control
Item No. 609S	Native Grassland Seeding and Planting for Erosion Control

<u>RELATED CROSS REFERENCE MATERIALS</u>

Specification 605S, "Soil Retention Blanket"
--

City of Austin Standard Specification Items

Designation	Description
Item No. 101S	Preparing Right-of-Way
Item No. 102S	Clearing and Grubbing
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 132S	Embankment
Item No. 606S	Fertilizer
Item No. 608S	Planting
Item No. 610S	Preservation of Trees and Other Vegetation

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

Designation	Description
Item No. 100	Preparing Right-of-Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work
Item No. 160	Furnishing and Placing Topsoil
Item No. 162	Sodding for Erosion Control
Item No. 164	Seeding for Erosion Control
Item No. 166	Fertilizer

Current Version: 6/21/07

Previous Versions: 11/15/99 and 4/17/86

Item No. 168
Item No. 169
Item No. 204

Vegetative Watering
Soil Retention Blanket
Sprinkling

**ITEM NO. 606S
FERTILIZER**

606S.1 Description

This item shall govern the provision and distribution of fertilizer over the areas indicated on the Drawings and in accordance with these specifications.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, inch-pound units are given preference with SI units shown within parentheses.

606S.2 Submittals

The submittal requirements for this specification item shall include:

- A. Type of soil(s) at the site.
- B. Type(s) of re-vegetation (seeding, sodding, etc).
- C. Type(s) of fertilizer.
- D. Rate(s) of application of fertilizer.
- E. Chemical analysis of the fertilizer(s).

606S.3 Materials

All fertilizer used on site shall be delivered in bags or containers, which are clearly labeled and show the analysis. The figures in the analysis shall represent the percent of nitrogen, phosphoric acid and potash nutrients, respectively, as determined by the methods of the Association of Official Agricultural Chemists. The fertilizer may be subject to testing by the State Chemist in accordance with the Texas Fertilizer Law. A pelleted or granulated fertilizer shall be used.. Fifty percent or greater of the Nitrogen required shall be in the form of Nitrate Nitrogen (NO_3). The remaining Nitrogen required may be in the form of Urea Nitrogen [$\text{CO}(\text{NH}_2)_2$].

The total amount of nutrients furnished and applied per acre (hectare: 1 hectare equals 2.471 acres) shall equal or exceed that specified for each nutrient.

606S.4 Construction Methods

General requirements and criterion for vegetative activities, including fertilizing, for the City of Austin are presented in Section 1.4.4, "Vegetative Practice", and Section 1.5.4, "Revegetation Criteria" of the City of Austin Environmental Criteria Manual.

The fertilizer type and rate of application should be based on chemical tests of representative

soil samples taken after completion of construction and ground work. Appropriate initial fertilizer application rates for the Austin area (in lieu of recommendations from soil testing) are provided in the sections of the City of Austin Environmental Criteria Manual identified below:

- A. Permanent seeding. - [Section 1.4.4.B.4].
- B. Restoring Climax Grasses - [Section 1.5.5.E].
- C. Sod - [Section 1.4.4.E.5].
- D. Maintenance of Mulch Sod - [Section 1.4.4.C.4].

Pelleted or granulated fertilizer shall be applied uniformly into the soil to a depth of 4 inches (100 mm) over the area specified on the Drawings to be fertilized and in the manner directed for the particular item of work. The fertilizer shall be dry and in good physical condition. Fertilizer that is powdered or caked will be rejected. Distribution of the fertilizer for the particular item of work shall meet the approval of the Engineer or Designated Representative.

Maintenance fertilizing shall be applied every 6 months after the new sod or grass is placed or until the work is accepted by the City.

The fertilizer may also be applied with the hydromulch

606S.5 Measurement

Work and acceptable material for "Fertilizer" will be measured by the normal ton of 2,000 pounds (megagrams: 1 megagram equals 1.1023 tons) or by the 100 pounds (50 kilograms: 1 kilogram equals 2.205 pounds) as determined by approved scales or guaranteed weight of sacks shown by the manufacturer.

606S.6 Payment

The work performed and materials furnished and measured as provided under "Measurement" shall be included in the unit price bid for the item of construction in which fertilizer is used, unless specified in the Drawings as a Pay Item.

When fertilizer is specified on the Drawings as a pay item or included as a pay item in the contract bid form, the work performed and materials furnished and measured as provided under "Measurement" will be paid for at the unit bid price for "Fertilizer" of the analysis specified on the Drawings. The unit bid price shall include full compensation for furnishing all materials and performing all operations necessary to complete the work.

Payment, when specified, will be made under one of the following:

Pay Item No. 606S-A:	Fertilizer	Per Ton.
Pay Item No. 606S-B:	Fertilizer	Per 100 Pounds.

End

SPECIFIC CROSS REFERENCE MATERIALS**Specification Item 606S "Fertilizer"****City of Austin Environmental Criteria Manual**

Designation	Description
Section 1.4.4.B.4	Design Criteria of Section B. Critical Area Stabilization (with Permanent Seeding)
Section 1.4.4.C.4	Design Criteria of Section C. Critical Area Stabilization (with Mulch Sod)
Section 1.4.4.E.5	Site Preparation of Section E. Critical Area Stabilization (with Sod)
Section 1.5.5.E	Fertilizer, Section E of 1.5.5, "Restoring Climax Grasses"

RELATED CROSS REFERENCE MATERIALS**Specification Item 606S "Fertilizer"****City of Austin Technical Specifications**

Designation	Description
Item No. 601S	Salvaging and Placing Topsoil
Item No. 602S	Sodding for Erosion Control
Item No. 604S	Seeding for Erosion Control
Item No. 605S	Soil Retention Blanket
Item No. 607S	Slope Stabilization
Item No. 608S	Planting
Item No. 609S	Native Grassland Seeding and Planting For Erosion Control
Item No. 610S	Preservation of Trees and Other Vegetation

City of Austin Standard Details

Standard No.	Description
626S-1	Grass Lined Swale
627S-1	Grass Lined Swale W/ Stone Center
633S-1	Landgrading

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

Designation	Description
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work
Item No. 160	Furnishing and Placing Topsoil
Item No. 162	Sodding for Erosion Control
Item No. 164	Seeding for Erosion Control
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 169	Soil Retention Blanket
Item No. 180	Wildflower Seeding
Item No. 192	Roadside Planting and Establishment
Item No. 204	Sprinkling

**SPECIAL PROVISION TO
Standard Specification Item No. 606S Fertilizer (Version 06/21/2007)**

These special provisions serve to modify, add to, and/or delete from the City of Austin Standard Technical Specification Item No. 606S: Fertilizer, dated 6/21/2007, incorporated into this Project Manual. Any item, paragraph, article, or work contained therein unless specifically modified, added to or deleted herein shall apply where applicable.

606S.1 Description

DELETE the first sentence in its entirety and replace with the following:

This item shall govern the provision and distribution of fertilizer and other soil amendments over the areas indicated on the Drawings and in accordance with these specifications.

606S.2 Submittals

ADD the following items:

- F. Bills of lading for compost or compost tea and all other soil amendments required by the soil analysis described in SS612S shall be submitted indicating quantities that have been incorporated into the soil.
- G. Analysis of compost or compost tea to establish that it meets the requirements identified below. Current test results (within 6 months of application) shall be provided to the Owner for review and approval.
- H. Results of Solvita Compost Maturity Test for proposed compost, including both carbon dioxide and ammonia tests.
- I. Description of compost or compost tea source materials, by percentage of volume.
- J. Identification of compost or compost tea source including supplier's name, address, phone number, and website address.
- K. Compost tea manufacturer's instructions for mixing and application rates.
- L. Length of composting period.
- M. One quart sample of compost material(s).

606S.3 Materials

ADD the following:

- A. Additional organic material shall be added to raise soil organic matter content of the stockpiled topsoil as indicated by a soil analysis. A methodology for calculating compost application rate based on fertilizer needs is
 - a. Compost: Well-composted, stable, and weed-free organic matter meeting the following parameters.
Manure, sewage sludge, or kitchen waste based composts are prohibited.

Parameters	Units of Measure	Range
pH	pH units	6 - 8 ¹
Soluble Salt Concentration	dS/m (mmhos/cm)	5 - 10 ¹
Organic Content	% (dry mass)	30-60%
Moisture Content	Content %, net weight basis	40-50%
Particle Size	% passing a selected mesh size dry weight basis	98% thru 3/4" screen or smaller
Bulk Density	---	800-1,000 lbs/cy
Nutrient Contents	Dry weight basis	N: 1-2.5%, P: 1-2%, K: 0.5-1.5%
Contaminants	Mg/kg (ppm)	<1
Maturity (Solvita®)		>5

- b. Compost will be rototilled into the stockpiled topsoil after it is placed back in the stream restoration area.
 - c. Rototilling shall not be done below the drip line of existing trees.
- B. Additional amendments shall follow the "Fertilizer Guidelines" provided by a soil lab. Contractor shall get approval on additional amendments from the Owner beforehand and submit manufacturer's data on amendments.
- a. Compost Tea: aerated compost tea shall be produced by a recognized and experienced producer of commercial aerated compost tea, meeting the following parameters:

Parameters	
Active bacteria	150 ug/ml
Total bacteria	300 ug/ml
Active fungi	10 ug/ml
Total fungi	20 ug/ml
Beneficial nematodes	10/ml
Ciliates	Not more than 100/ml

606S.5 Measurement

ADD the following pay item:

Pay Item No. 606S-C: Soil amendment: Compost	per CY
Pay Item No. 606S-D: Soil amendment: Compost tea	per GAL

End

¹ pH and soluble salt content is more relevant to the establishment and growth of a particular plant, than is the pH or soluble salt content of a specific compost used to amend the soil.

ATTACHMENT A TO SP606S CALCULATING COMPOST APPLICATION RATE BASED ON FERTILIZER NEEDSⁱ

- 1) First, you need a fertilizer recommendation based on a soil test. For more information on soil sampling, see CSU factsheet 0.500. For more information on selecting a laboratory, see CSU factsheet 0.520. These factsheets are available at: <http://www.ext.colostate.edu/pubs/crops/pubcrop.html#soil>
- 2) Fertilizer recommendations are typically made as lbs N, P₂O₅, or K₂O per acre. Be sure to use the corresponding analysis from your compost test report. Convert these figures to lbs/ton by multiplying % by 20.
- 3) Since compost is like a slow-release fertilizer, we assume only 20% of the N in the compost will be plant-available the first year after it is applied. For phosphorus, we assume 40%. For potassium, we assume 60%. These are rough estimates of availability. Multiply your compost analysis by these availability factors.
- 4) Then step-by-step, calculate your N, P₂O₅, and K₂O needs by dividing the lbs/acre required by the lbs/ton in the compost. The result will be in tons of compost to apply per acre.

Example:

The soils lab recommends 100 lbs N/acre and 40 lbs P₂O₅/acre. The compost results show 1.7% N, 1.3% P₂O₅, and 1.5% K₂O. How much compost should you apply?

First, convert compost results to lbs/ton.

$$1.7\% \text{ N} \times 20 = 34 \text{ lbs N/ton}$$

$$1.3\% \text{ P}_2\text{O}_5 \times 20 = 26 \text{ lbs P}_2\text{O}_5\text{/ton}$$

$$1.5\% \text{ K}_2\text{O} \times 20 = 30 \text{ lbs K}_2\text{O/ton}$$

Then, correct for availability.

$$34 \text{ lbs N/ton} \times 0.20 = 7 \text{ lbs available N/ton}$$

$$26 \text{ lbs P}_2\text{O}_5\text{/ton} \times 0.40 = 10 \text{ lbs available P}_2\text{O}_5\text{/ton}$$

$$30 \text{ lbs K}_2\text{O/ton} \times 0.60 = 18 \text{ lbs available K}_2\text{O/ton}$$

Finally, divide the fertilizer recommendations by the available nutrients.

$$\frac{100 \text{ lbs N/acre}}{\text{N/ton}} = 14 \text{ tons/acre } 7 \text{ lb av.}$$

$$\frac{40 \text{ lbs P}_2\text{O}_5\text{/acre}}{\text{P}_2\text{O}_5\text{/ton}} = 4 \text{ tons/acre } 10 \text{ lb av.}$$

ⁱSource: http://www.extsoilcrop.colostate.edu/Soils/powerpoint/compost/Calculating_compost_application_rate.pdf

Item No. 608S
Planting

608S.1 Description

This item shall govern the provision of the specified plants and other materials, the initial installation of plants and other materials, the maintenance of plantings, transplanting and any replacement of trees, plants and ground cover which are damaged, diseased or otherwise unhealthy during the warranty period or as directed by the Engineer or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

608S.2 Submittals

The submittal requirements for this specification item shall include:

- A. A listing of each type of planting (tree, shrubs, plants, etc.), type of stock (containerized, ball and burlapped, bare root, bag grown, etc.), name (common and botanical) and size of planting (root diameter, height and spread);
- B. A request, if necessary, for use by Contractor of collected stock on the site;
- C. Specific information for each pesticide (including herbicide) associated with the listing including:
 - manufacturer,
 - product name,
 - description of chemical composition,
 - handling, storage and mixing requirements
 - application recommendations
 - documentation of licensed applicator(s), and
 - MSDS Sheets
- D. Type, chemical analysis and rate of application of fertilizer
- E. Proposed tree dressing, trunk wrapping and flagging tape;
- F. Type, chemical analysis and rate of application of proposed transpirants
- G. Documentation of irrigator license, if irrigation is required at the site.

608S.3 General

A. Plant Standards

Unless shown otherwise on the Drawings, the following published standards will apply. Standards for nursery stock will be as stated in the "American Standard for Nursery Stock", as published by the American Association of Nurserymen, Incorporated. Botanical names as shown on the Drawings will be as stated in the "Standardized Plant Names" as identified by the American Joint Committee on Horticultural Nomenclature or other referenced text including the "Manual of the

Vascular Plants of Texas for Native Flora". Pruning standards will be as established by the National Arborist Association in the "Pruning Standards for Shade Trees".

B. License Requirements

1. Pesticide.

The Contractor shall be a licensed pesticide applicator or shall employ a licensed pesticide applicator for the treatment of insects, diseases, animals as required by the Texas Pesticide Laws and Regulations of the Texas Department of Agriculture. The Engineer or designated representative may request documentation of such certification.

2. Herbicide.

The Contractor shall possess a permit or employ a person who possesses a permit to apply herbicide as required by the Texas Herbicide Law of the Texas Department of Agriculture. The Engineer or designated representative may request documentation of such certification.

3. Irrigation.

The Contractor shall possess an irrigator's license issued by the State of Texas and the Texas Board of Irrigators or employ such a licensed irrigator to perform the irrigation system maintenance. The irrigation system shall be maintained under the supervision of the licensed irrigator who shall be available on the site as required by the Engineer or designated representative.

The Engineer may request documentation of such license. The Contractor shall verify and adhere to the requirements and codes of any controlling utility authorities.

608S.4 Materials

A. Plant Material

Plant material shall be first class grade, true to name and of the size indicated on the Drawings. All plants shall be healthy nursery grown unless otherwise indicated on the Drawings. When the Engineer or designated representative is furnished sufficient evidence that a specified plant cannot practically be obtained, the Engineer or designated representative may approve in writing the use of collected native material.

Nursery grown stock, either in containers or in the field, shall be nursery grown in accordance with accepted horticultural practices and under climatic conditions similar to those of the work site for at least twelve (12) months, unless specifically authorized otherwise by the Engineer or designated representative.

1. Container plants.

Soil volume for containers shall be three-fourths (3/4) the depth of the container or greater and contain roots of the plants throughout the root ball.

(a) Containerized Stock.

This stock will be defined as nursery plant stock transplanted from a growing site with a ball of soil, containing an intact root system, and placed in a container and grown in that container continuously long enough for the new fibrous roots to have developed so that the root mass retains its shape and holds together after removal from the container. Containerized stock shall

have been grown in the delivered containers for at least six (6) months, but not over two (2) years.

(b) Container Grown Stock.

This stock will be defined as nursery plant stock, which has been planted in a container as a liner, seed or by other propagation method, and that:

- (1) has been systematically replanted or stepped up in larger containers as required,
- (2) has developed a root system in a planting medium capable of sustaining acceptable plant growth, and
- (3) has become established in the container and exhibits a well-rooted condition as evidenced by the soil ball remaining intact when removed from its container.

2. Balled and Burlapped Stock.

This stock will be defined as nursery plant stock which has been removed from the growing site with a ball of soil, containing the intact root system, and encased in burlap (or other approved similar material) to hold the soil in place. Ball sizes for balled and burlapped stock shall be as shown on the Drawings.

3. Bare Root Stock.

This stock will be defined as nursery plant stock, which has been removed from the growing site with the root system substantially free of soil. The approved minimum root spread and condition shall be as shown on the Drawings.

4. Collected Stock.

This stock will be defined as nursery plant stock, which has been removed from its original native habitat. All collected stock shall specific approval of the Engineer or designated representative before it can be removed from its existing habitat. Ball sizes for collected stock shall be as shown on the Drawings and shall have sufficient diameter and depth to encompass enough fibrous and feeding root system as necessary for the full recovery of the plant. Collection may be by hand or mechanical method. For balled and burlapped or mechanical transplanting of collected plant material refer to article 608S.5.

5. Bag Grown Stock.

This stock will be defined as nursery plant stock which has been transplanted into a nonwoven fabric container which has been placed in the ground and the plant grown under nursery field conditions continuously long enough [normally one (1) month for each inch (25 mm) of bag diameter i.e., a plant with a 24 inch (600 mm) diameter bag, grown in its original planted location for 24 months] for the fibrous roots to have developed so that the root mass retains its shape and holds together after removal of the bag. The root ball shall be flat bottomed and straight sided. Ball sizes for bag grown stock shall be as shown on the Drawings. Bag grown stock shall not be pruned before delivery.

6. Other Plant Materials.

Other plant materials shall be as shown on the Drawings.

B. Rejection of Plants.

Plant material having any of the following features will be subject to rejection:

1. Undue or excessive abrasions of the bark.
2. Dried or damaged root system.
3. Dried or damaged top wood of deciduous plants or dried or damaged foliage and top woods of evergreens.
4. Prematurely opened or damaged buds or buds stripped off.
5. Disease or insect infestation, including eggs or larvae.
6. Dry, loose, cracked, broken and/or undersized balls or containers, which do not conform to sizes indicated on the Drawings.
7. Evidence of heating, molding, wind burn, sunscald, freezing, etc.
8. Container plants that are overgrown or root bound.
9. Plants with bench balls (roots repacked with soil).
10. Plant balls encased in non-bio-degradeable plastic or other impervious material.
11. Field grown or collected plants transplanted into containers less than six (6) months or more than two (2) years.
12. Trees that have been damaged, pruned, crooked or multiple leaders, unless multiple leaders are specified or are normal for the species.
13. Plants with disfiguring knots or fresh cuts of limbs over 3/4 inch (20 mm) that have not completely callused.
14. Plants that do not possess a normal balance between height and spread for the species.
15. Plant containers that are not structurally sound (tracked, bent, etc.).
16. Plants in containers less than three-fourths (3/4) planting medium depth;
17. Any endangered or threatened plants; or plants of historical significance that have been collected;
18. Any other physical damage or adverse conditions that would prevent thriving growth or cause an unacceptable appearance; or
19. Plants that do not meet the standards shown on the Drawings.

C. Delivery and Receipt of Plants

Material shall not be delivered to the project until ordered to do so in writing by the Engineer or designated representative. When the delivery order is issued, the Engineer or designated representative shall be notified of a proposed delivery of plant material at least 48 hours prior to its arrival at the project. The entire plant shall be properly protected from sun and air damage during the time period from initiation of digging until delivery on the project.

Each plant material shipment shall be accompanied by an invoice indicating the number, size and name (common and botanical) of each of the kinds of plant material included in the shipment. Each kind of plant in the shipment shall be adequately identified by tags. All plants shall be individually tagged with nursery name tags designating the genus, species and variety of the plant.

No shipment of plant material shall be accepted, planted and/or heeled-in by the Contractor until such material has been inspected and accepted by the Engineer or designated representative. The Contractor shall assist the Engineer or designated representative in the inspection of material. Any plants rejected shall be immediately removed from the project and replaced.

Unless plants are placed in predug holes and planted as specified herein, they shall be heeled-in and inspected again prior to planting. If delivered to predug planting holes, balled and burlapped plants shall be planted within 1 to 6 hours depending upon the drying effect of the wind and sun. No bare rooted plants shall be placed in predug holes from the delivery truck unless actual planting occurs immediately after removal from its moist packing.

D. Plant Size

Plants will be measured when branches are in their normal position. Height and spread dimensions shown on the Drawings refer to the main body of the plant and not branch tip to tip. Plants with a spreading or semi-spreading habit will be measured by the average diameter of the spread. Plant heights will be measured by the mean height from the ground line to the top of the canopy. Caliper measurements will be taken at a point on the trunk six (6) inches [150 mm] above natural ground for trees up to four (4) inches [100 mm] in caliper and at a point twelve (12) inches [300 mm] above natural ground for trees over four (4) inches [100 mm] in caliper. The caliper size for multi-trunked plants will be determined by adding the calipers of the largest cane and one-half (1/2) the caliper(s) of the second and third largest cane(s).

When a range of size is shown on the Drawings, no plant shall be less than the minimum size and at least 40% of the plants shall be as large as the maximum size shown on the Drawings. The required measurements are the minimum sizes acceptable and are the measurements after pruning, when pruning is required.

Sizes of plants or plant types such as palms, roses, vines, groundcovers, seedlings, bulbs, corms, tubers, young plants, understock, etc., will be measured in accordance with the plant standards or as indicated on the Drawings.

Container-grown plants which are well established in adequate size containers and are of equal quality and size to the specified balled plants may be accepted in lieu of balled plants; likewise, balled plants of equal quality and size may be substituted for container-grown plants when permitted by the Engineer or designated representative. Soil shall be approximately 3/4 depth of container and contain roots of the plant throughout the soil.

The ball size for a balled and burlapped plant shall be firm natural balls equal to or in excess of the ball sizes indicated on the Drawings. Collected plant material substituted for a nursery-grown plant shall have a ball or root system 1/4 greater in both diameter and depth than the nursery-grown plant for which it is substituted. The ball size shall be the average of the diameters measured 90 degrees apart.

E. Mulch

Unless indicated otherwise on the Drawings, mulch material shall consist of loose organic residue derived from plants or other granular material approved by the Engineer or designated representative. It shall be of such nature that adequate protection is provided against sun baking and quick drying out of the soil and shall not impede aeration or water penetration nor deplete the soil nitrogen. Mulch material shall be free of excess amounts of large leaves and sticks that would prevent proper dressing of the mulched surface, free of harmful substances and free of detrimental amounts of soil or other foreign matter that would promote early compaction, matting or deterioration of the mulch.

F. Peat Moss

Peat Moss shall be of sphagnum origin of commercial quality.

G. Planting Soil Mixture

The planting soil mixture shall consist of a soil mixture of 3/4 fine sandy loam, 1/8 peat moss and 1/8 leaf mold. The sandy loam shall be taken from a well drained, arable site. It shall be free of subsoil, stones, clay, roots, weeds, grass or other objectionable debris, matter or toxic wastes.

H. Water

Water shall be furnished by the Contractor and shall be clean and free of industrial wastes and other substances harmful to the growth of plants and the areas irrigated.

Availability of water from the Austin Water Utility will be limited as stated under the Water Conservation Standard, City of Austin Land Development Code Chapter 6-2, Article II, "Water Use Management Plan Established".

The use of potable water will be restricted as stated in City of Austin Land Development Code Sections 6-4-73, 6-4-54, 6-4-63, 6-4-64, 6-4-65, 6-4-81, 6-4-92, 15-9-37(D) and 15-9-101(B).

I. Fertilizer

Fertilizer shall be applied uniformly conforming to City of Austin Standard Specification tem No. 606S, "Fertilizer" at the rate indicated.

J. Pesticides including Herbicides

Pesticides including herbicides shall be of the types that are commercially available selected for the species planted or as indicated on the Drawings and shall be applied in accordance with the manufacturer's recommendations upon approval of the Engineer or designated representative.

K. Stakes and Guys

Stakes shall be 2 x 2 x 18 inch (50 x 50 x 450 mm) sound hardwood or treated pine with tapered point and chamfered tops. Guys wires shall be 2 strand 12 ga. (2.7 mm) galvanized steel wire with 1/2 inch (12.5 mm) diameter reinforced plastic or rubber hose trunk bushings and yellow plastic flagging.

L. Bracing

Bracing shall be 2 x 4 inch (50x100 mm) hardwood or metal fence posts, 6 ft. (1.8 meters) in length with guys and bushings.

M. Flagging Tape

Flagging tape shall be highly reflective, visible at night, and approved by the Engineer or designated representative.

N. Trunk Wrapping

Trunk wrapping shall be 4 inch (100 mm) wide commercial trees wrapping paper with asphalt core or the type shown on the Drawings.

O. Anti-transpirants

Anti-transpirants, intended to prevent evaporation, shall be of the types that are commercially available and approved by the Engineer or designated representative.

608S.5 Construction Methods

Immediately following delivery and acceptance at the job, all plants shall be planted or heeled-in in properly moistened material. All plants heeled-in shall be properly maintained by the Contractor until planted. The utmost care shall be exercised in handling plants to prevent injuries to the plants. The solidity of the ball or balled and burlapped plants shall be carefully preserved and such plants shall not be handled by the stems.

Plants with exposed roots shall be protected from drying out during the time the plants are removed from the heeling-in bed and until actually planted.

A. Staking of Planting Locations.

All locations of trees, shrubs and beds shall be staked in the field by the Contractor. All locations will be approved by the Engineer or designated representative prior to any excavation of plant beds or bed preparation. Stakes shall be placed and coded to denote the type of plant material.

B. Excavation of Planting Pits**1. General.**

The Contractor shall not excavate plant pits more than 24 hours in advance of planting operations. Any plant pits left unattended for any length of time which may present a hazard shall be covered and/or clearly flagged as approved by the Engineer or designated representative. The walls and bottoms of all plant pits shall be scarified immediately prior to the placement of plants.

2 Pit Sizes.

Planting holes may be dug by hand or by mechanical means and shall be circular or square (according to the shape of the root ball) with vertical sides, unless otherwise indicated on the Drawings. Trimming of the sides or bottom of the hole to uniform shape will not be required. Planting pit sizes shall be as follows, unless indicated otherwise on the Drawings:

- (a) A minimum horizontal dimension of twelve (12) inches [300 mm] between the root ball and the sides of the planting pit for the following plant specifications:
 - (1) Containers of fifteen (15) gallons or larger [56 liters or larger],
 - (2) Boxes of fourteen (14) inches or larger [350 mm or larger] and
 - (3) Root ball diameter of Balled and burlapped or bag grown plants larger than fourteen (14) inches [350 mm].
- (b) A minimum horizontal dimension of two (2) times the diameter of the root ball for the following plant specifications:
 - (1) Containers less than fifteen (15) gallons [less than 56 liters]
 - (2) Root ball diameter of Balled and burlapped or bag grown plants fourteen (14) inches or less [350 mm or less]
- (c) A minimum diameter for bare-root plants to permit the roots to spread without crowding or curving around the walls of the pit.
- (d) Planting pits shall be excavated to a depth of at least 4 inches (100 mm) but not more than 8 inches (200 mm) greater than the depth of the root ball of balled and burlapped, containerized, container grown or bag grown plants; or the depth of the root system of bare-root plants. Pits dug to excess depths shall be backfilled and compacted to bring the pits to the specified depth. The depth of pits on slopes shall be measured at the lower side.

- (e) When performing mechanical transplanting, the receiving plant pit shall be excavated with the same type of equipment used to remove the plant material or as approved by the Engineer or designated representative.
- (f) Special sized holes shall be shown on Drawings.
- (g) Where holes are dug with an augur and the sides of the holes become plastered or glazed, this plastered or glazed surface shall be scarified.

C. Planting Season

All planting shall be performed as shown below, indicated on the Drawings or as approved by the Engineer or designated representative.

Planting Stock	Planting dates
Containerized or Container grown	None specified
Balled and burlapped	November 15 to March 15
Bare root	January 15 to March 15
Bag grown	September 15 to April 15
Collected	As shown on the Drawings or as approved by the Engineer or designated representative

D. Backfilling

Topsoil from the planting hole may be used for backfilling provided it is kept separate from subsoil and rendered loose and friable. Additional topsoil required to backfill the holes shall be furnished in the amount directed in Subarticle 608S.4.G, 'Planting Soil Mixture' and from a source approved by the Engineer or designated representative.

E. Pruning Roots

Root pruning shall be limited to the amount necessary to prune away broken and badly damaged roots.

F. Pruning of Tops

Pruning of plants shall conform to the best horticultural practice and shall be appropriate to the various types of plants and the special requirements of each. Deciduous (non-evergreen) shrubs and trees with heavy tops shall have about 1/3 to 1/2 of the top growth removed. Plants otherwise acceptable, but with broken or badly bruised branches, shall have such branches removed with a clean cut. All cut surfaces over 1 inch (25 mm) in diameter shall be painted with an approved tree pruning compound.

G. Planting and Backfilling

In general the top of root ball shall stand after settlement of the backfill approximately level with the finish grade. When shown on the Drawings, fertilizer of the type and quantity specified shall be added on the backfill material prior to backfilling. Unless indicated otherwise on the Drawings or approved otherwise by the Engineer or designated representative, planting and backfilling shall be as follows:

1. Plant Basin

A basin, 8 to 10 inches (200 to 250 mm) deep, shall be formed by constructing a neat levee around the planting pit. The inside measurement of the basin shall be

at least the diameter of the growing plant, unless noted otherwise on the Drawings. On slopes the backfill on the lower side shall be graded in such a manner that an adequate basin will be provided.

As shown on the Drawings, either material excavated from the planting pit (excluding any rocks) or Backfill, as specified in Subarticle 608S.5.D may be used to form a basin around the plant. Excess excavated material may be scattered thinly and leveled off provided it is of such consistency and character that it can be readily scattered in an acceptable manner. If scattering of the material may interfere with drainage or mowing, all such material shall be removed and disposed of as approved by the Engineer or designated representative.

2. Depth of Transplanting

In general, plants shall be installed and covered with top soil approximately one (1) inch (25 mm) above the top of the root ball or container soil surface.

3. Bare Root Plants

After the backfill in the bottom of the planting pit has been firmed and the plant placed in the proper position, as shown on the Drawings, loose friable backfill (Subarticle 608S.5.D) or planting soil mixture (608S.4.G) shall be worked about the roots and thoroughly settled with water as the backfill is made. Care shall be taken to avoid bruising or breaking the roots. Sticks, sod, clods or other material which may form large air pockets in the soil or backfill shall not be included in the backfill.

4. Balled and Burlapped Plants

Plants of this type shall not be handled by the stems nor in such manner that the soil of the ball may be loosened. A saddle around the ball should be used for lifting. The burlap shall not be removed from the ball. After the backfill in the bottom of the pit has been firmed and the plant placed in the proper position, as shown on the Drawings, loose friable backfill shall be worked about the ball in 12 inch (300 mm) until the pit is two-thirds ($\frac{2}{3}$ full). The burlap shall then be opened on top of the root ball to expose the top one-third ($\frac{1}{3}$) of the root ball. The pit shall then be filled with water and the backfilling completed, working the backfill and water well to prevent any air pockets.

For ball supporting devices such as wire baskets, the basket shall not be removed. The plant shall be placed in the prepared planting pit in the proper position and backfill shall be placed around the ball until the pit is about one-third ($\frac{1}{3}$) full. The basket shall be carefully removed to just above the backfill, leaving the bottom portion intact. Backfilling shall be completed as described above.

5. Containerized or Container Grown Plants

At the time of planting the root ball and plant shall be carefully removed from the container to prevent damage to the plant and root ball. If in the opinion of the Engineer or designated representative a sufficient amount of soil has fallen off or the ball has been broken to such an extent as to reduce the chances of the plant to grow, the plant will be rejected. Container plants shall be acclimated to outside growing conditions. Container plants shall be placed and backfilled in the same manner as balled and burlapped plants.

6. Bag Grown Plants

Prior to planting, the fabric bag shall be removed by using a knife to cut the side of the bag from top to bottom in three or four places of equidistant around the root

ball. The bag shall be carefully peeled down and roots that do not easily peel away from the bag shall be pruned. The plastic bag shall then be pulled from under the root ball. Bag grown plants shall be placed and backfilled in the same manner as balled and burlapped plants.

H. Vegetative Watering

During the planting operations, the Contractor shall keep the ground and backfill material moist to at least 12 inches (300 mm) around the root ball. The Contractor shall be required to meet the minimum watering requirements shown on the Drawings for all circumstances by a method approved by the Engineer or designated representative. When an irrigation system is shown on the Drawings, the Contractor shall coordinate all work to insure that the irrigation system is operational as the plants are installed.

I. Anti-transpirants

When shown on the Drawings, the Contractor shall apply anti-transpirants in accordance with the manufacturer's recommendations and as approved by the Engineer or designated representative.

J. Pruning

Plants shall not be pruned immediately before delivery to the work site, unless shown otherwise on the Drawings or as approved by the Engineer or designated representative. Common nursery pruning practices are acceptable. Any necessary pruning shall be done at the time of planting as approved by the Engineer or designated representative and shall be appropriate to the various types of plants and the special requirements of each.

From 20 to 40 percent of all foliage of mechanically transplanted plants shall be removed by pruning interior branching, entangled limbs and small branches. Structural branching shall not be removed prior to planting. Branch tips shall not be removed to attain the above percentage.

K. Plant Supports and Bracing Trees

Plant supports such as staking, guying and bracing shall be as shown on the Drawings or as required by the Engineer or designated representative.

Trees shall be staked, guyed or braced for support during the same day as planted. Unless shown otherwise on the Drawings, the plants shall stand approximately vertical after staking, guying or bracing. The Contractor shall be responsible for material remaining approximately vertical and straight for all given conditions and shall repair plant supports as often as required until final acceptance of the work.

All trees 1 1/4 inches (38 mm) and greater in caliper shall be adequately braced immediately after the plants have settled. Unless otherwise indicated on the Drawings, trees 1 1/4 to 2 inches (38 to 50 mm) in diameter shall be braced with 1 brace of sawed lumber, 2 x 2 inches (50 x 50 mm), nominal size, firmly fastened to the tree at a point 5 to 6 feet (1.5 to 1.8 meters) above ground or as directed by the Engineer or designated representative. Fastening shall not be accomplished by nails, staples, wire or other materials that may damage tree. Braces shall be of sufficient length to provide bracing when firmly driven into the ground. The tree trunk shall be adequately padded with a section of flexible hose at the point of attachment with a figure 8 tie. Trees, that are 2 inches to 4 inches (50 to 100 mm) in diameter, shall be

braced with wires at a height of 6 to 8 feet (1.8 to 2.4 meters) above ground. The wires shall be firmly attached to 3 equally spaced concentric stakes that are firmly driven into the ground. The trunk of the tree shall be adequately and securely padded with rubber at the point of attachment of the wire to prevent damage. Wire shall be number 16 gauge (1.5 mm) galvanized.

Trees larger than 4 inches (100 mm) in diameter shall be braced in accordance with notes on Drawings. The Contractor shall repair braces as often as required until acceptance of the project for "Plant Establishment".

L. Safety Flagging Tape

Staking, guying or bracing, which present a hazard shall be clearly flagged as shown on the Drawings or directed by the Engineer or designate representative.

M. Tree Trunk Protection

All trees indicated on the Drawings to be wrapped shall be neatly and securely wrapped with a commercial tree wrapping material approved by the Engineer or designated representative. The tree wrapping shall begin at the base of the trunk and extend upward with a 50 percent overlap to the second whorl of branches. The tree wrapping material shall be secured at the top of wrap with soft twine or weatherproof type tape or any suitable method, approved by the Engineer or designated representative. Wire, metal bands or other material for this purpose that may cause injury or damage to plants shall not be used.

N. Mulching

All plants shall receive mulching to a depth of 2 to 3 inches (50 to 75 mm) within the water basin or across the beds unless indicated otherwise on the Drawings. A small amount of backfill shall be sprinkled on top of organic mulch to hold it in place if directed by the Engineer or designated representative. If hay is used, the depth shall be 4 inches (100 mm) loose measurement.

O. Plant Material Removal and Replacement

A plant shall be removed and replaced as directed by the Engineer or designated representative at any time during execution of the work under this Item including the Establishment Period if, in the judgement of the Engineer or designated representative, a plant is found to be in any of the following conditions:

1. Dead;
2. Dying;
3. Wilted for 48 hours or more; or
4. Any other signs of detrimental consequence.

All replacement plants shall be the same species, size and quality as originally specified. The Contractor shall make every effort to ensure that the replacement material receives any additional care and maintenance required for the replacement plants to become well established. The Engineer will require replacement of plant material until satisfied that all of the plants on the work are in a healthy, vigorous condition.

P. Maintenance and Initial Plant Replacement

The Contractor shall water the plants as often as necessary, cut the weeds and grass around the planted area including the plant basin and bracing, prune the plants, treat the plants in accordance with approved methods of horticultural practice where

insects or disease affect the plants after planting and repair or replace the bracing as may be required or as ordered by the Engineer or designated representative until the planting project has been accepted for "Plant Establishment".

If the Contractor completes the initial planting prior to March 1 for balled and burlapped and bare root plants or April 1 for bag grown plants, the Contractor will be required to replant all material found to be missing, damaged or dead during this time. This replanting shall be done between March 1 and March 15 for balled and burlapped and bare root plants, between April 1 and April 15 for bag grown plants or as directed by the Engineer or designated representative.

In the event that the planting project is not completed by March 15 for balled and burlapped and bare root plants, or by April 15 for bag grown plants and no further planting is permitted until the following "Planting Season", the partial planting will be cared for as prescribed under "Plant Establishment".

608S.6 Plant Establishment

"Plant Establishment" shall commence with the notice of substantial completion and shall extend to the following November 15 for those plantings that are completed in accordance with Subarticle 608S.5.P, 'Maintenance and Initial Plant Replacement'. In those instances where planting 'out of season' is allowed in writing by the Engineer or designated representative, "Plant Establishment" shall commence with notice of substantial completion and shall extend for a minimum of six (6) months or to the following November 15, whichever ever results in a later date.

For the work of "Plant Establishment", all possible means shall be employed to preserve the plants in a healthy and vigorous growing condition to insure their successful establishment. The Contractor shall perform all of the activities listed below during placement of all the plants. After the completion of the installation, as shown on the Drawings and as approved by the Engineer or designated representative, the Contractor shall perform the following activities for a period of 90 calendar days:

A. Mulching, Plant Basin and Bed Maintenance

The Contractor shall reshape or reform the existing plant basins and beds as necessary to conform to the Drawings, and as approved by the Engineer or designated representative. As a part of the plant basin and bed maintenance, weeds and grass shall be removed prior to the application of mulch. Unless otherwise shown the Drawings, the mulch shall be maintained to a minimum depth of 2 to 3 inches (50 to 75 mm).

The Contractor shall maintain the plant basins, beds and site fixtures generally free of weeds and grass or other materials detrimental to the growth of the plants or the appearance of the site. Herbicides, if approved by the Engineer or designated representative and used by the Contractor, shall be limited to the plant basin and perimeter thereof or around site fixtures as approved by the Engineer or designated representative. Extreme care shall be taken to insure that the herbicide does not come into contact with any part of the desirable plants. Under no circumstances shall the herbicide be used on days where the wind could cause drift hazard to desirable plants. The Contractor shall also follow the manufacturer's instruction for the use and application of any herbicide.

B. Plant Irrigation

The Contractor shall be required to meet the minimum watering requirements for all circumstances by a method approved by the Engineer or designated representative as stated under Subarticle 608S.5.H and/or as shown on the Drawings.

Watering equipment other than an existing irrigation system shall have adequate and accurate measuring devices as approved by the Engineer or designated representative.

C. Mowing and Trimming

The Contractor shall mow and trim the areas identified on the Drawings. The work shall be performed at the frequency as shown on the Drawings. The initial cycle shall begin when directed by the Engineer or designated representative. Mowing heights shall be as shown on the Drawings or approved by the Engineer or designated representative.

The Contractor shall use power equipment as approved by the Engineer or designated representative. Nylon cord trimmers shall not be used inside the plant basins or beds around plant material.

D. Restaking, Reguying and Rebracing of Plants.

Any damaged or destroyed stakes, guys or braces shall be replaced by the Contractor in accordance with the details shown on the Drawings. This shall include any adjustment to the staking or guying to prevent girdling of plants.

E. Pruning

When directed by the Engineer or designated representative or shown on the Drawings, plants shall be pruned by the Contractor to the satisfaction of the Engineer or designated representative. Dead or damaged limbs on trees and shrubs, including suckergrowth on trunks of trees, shall be removed. All pruning shall be accomplished with tools specifically designed for this purpose. All pruned material shall become the property of the Contractor and shall be disposed of in a manner approved by the Engineer or designated representative.

F. Insect, Disease and Animal Control

The Contractor shall treat the plants and/or the planted areas in accordance with accepted methods of horticultural practices and the Texas Department of Agriculture guidelines regarding the use of pesticides. The Contractor shall also follow the manufacturer's instructions for the use and application of any pesticides.

G. Litter Pick-Up

Unless shown otherwise on the Drawings, the Contractor shall collect and dispose of all litter within the landscaped areas. The work shall be performed at the frequency shown on the Drawings or as directed by the Engineer or designated representative.

All litter shall become the property of the Contractor and shall be disposed of in a manner acceptable to the Engineer or designated representative.

H. Fertilization

During the 90-day establishment period, the Contractor shall furnish and apply fertilizer only to those plants as shown on the Drawings. The analysis, times and rates of application shall be as shown on the Drawings. The type of fertilizer and method of application shall be as shown on the Drawings or as approved by the Engineer or designated representative.

I. Plant Removal

In the judgement of the Engineer or designated representative, any plant that is dead or dying for reasons beyond the control of the Contractor and is not to be replaced shall be removed by the Contractor to the satisfaction of the Engineer or designated representative. This shall include repair of the plant pit and the surrounding area.

608S.7 Acceptability of Plants

Between 90 to 100 days following the initial planting and initial plant replacement, the Engineer or designated representative will make an inspection of the project to determine the acceptability of the plant material. At this time, an inventory of missing, dead or rejected plant material will be made and the Contractor notified that the plants on the inventory are to be replanted the following planting season between November 15 and December 15 or as specifically permitted by the Engineer or designated representative. Plant material for the replacement planting shall meet all the requirements specified for the original plant material and shall be planted in accordance with the planting instructions listed under "Construction Methods", except that no further plant replacement will be required. Working days stated in the Contract shall apply to the initial construction period only and will not include the time necessary for replanting. A final inspection shall be made within 10 days after the replacement planting is completed.

608S.8 Measurement

Work and accepted material as prescribed for this item including "Plant Establishment" will be measured as each plant of the type and size complete and in place.

608S.9 Payment

Work performed and accepted material as prescribed by this item, measured as provided under "Measurement", will be paid for at the unit bid price bid for each plant of the type and size specified, complete and in place. The unit bid price shall include full compensation for furnishing all labor, pruning, mowing, insect control, disease control, animal control, watering, fertilizing, herbiciding, litter pickup, maintenance, tools, equipment, materials, supplies and incidentals necessary to complete the work.

Payment will be made under:

Pay Item No. 608S-1: Planting Type ____, Size in inches ____	Per Each.
Pay Item No. 608S-2: Irrigation System	Lump Sum

End

SPECIFIC CROSS REFERENCE MATERIALSCity of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 606S	Fertilizer

City of Austin Land Development Code

<u>Designation</u>	<u>Description</u>
Section 6-4-52	Water Use Management Plan Established
Section 6-4-53	Applicability
Section 6-4-54	Compliance Required
Section 6-4-63	Permanent Water Use Restrictions
Section 6-4-64	Water Conservation Stage One Regulations
Section 6-4-65	Water Conservation Stage Two Regulations
Section 6-4-81	Variance
Section 6-4-92	Penalty
Section 15-9-37(D)	Customer's Responsibilities
Section 15-9-101(B)	Basis for Termination of Service

RELATED CROSS REFERENCE MATERIALSCity of Austin Environmental Criteria Manual

<u>Designation</u>	<u>Description</u>
Section 1	Water Quality Management
Section 1.4.4	Vegetative Practices
Section 1.5.0	Vegetation Criteria
Section 1.5.3	Impact Minimization and Restoration Planning
Section 1.5.3.D.6	Discussion-Plant Protection
Section 1.5.3.D.8	Salvaging Trees and Shrubs
Section 1.5.3.D.9	Transplanting Procedure
Section 2	Landscape
Section 2.4.1	Street Yard
Section 2.4.1.D	Street Yard Trees
Section 2.4.6	Irrigation of Landscape Areas
Section 2.4.6.A.1	'Owner responsibility for irrigation
Section 2.7.0	Hill Country Roadway Landscape Criteria
Section 2.7.2	Design Criteria
Section 2.7.2.G	Irrigation
Section 3	Tree and Natural Area Preservation
Section 3.3.2	General Tree Survey Standards
Section 3.3.2.A.1	Diameter
Section 3.5.4.A.6	Mitigation Measures-Enforcement Criteria
Section 3.5.0	Design Criteria
Section 3.5.4	Mitigative Measures
Section 3.5.4.E	Transplanting
Section 5	Construction in Parks
Section 5.3.0	Route Selection
Section 5.3.1	Tree Survey
Appendix K	Arboricultural Practices - Parks
Appendix K, I	Tree Protection
Appendix K, II	Treatment of Minor Wounds or Breakage
Appendix N	Professional Plant List
Appendix O	Site Development Permit-Irrigation Notes
Appendix P-2	Standard Notes for Trees and Natural Area Protection
Figure 1-27	Grasses
Figure 1-33	Rare Plants in the Austin Area

City of Austin Transportation Criteria Manual

<u>Designation</u>	<u>Description</u>
Section 1.4.3	Classification Design Criteria-
Section 6.2.3	Transportation Criteria for Landscaping

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 101S	Preparing Right of Way
Item No. 111S	Excavation
Item No. 601S	Salvaging and Placing Topsoil

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 160	Furnishing and Placing Topsoil
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 170	Irrigation System
Item No. 192	Roadside Planting and Establishment

**SPECIAL PROVISION TO
Standard Specification Item No. 608S Planting (dated 06-16-08)**

These special provisions serve to modify, add to, and/or delete from the City of Austin Standard Technical Specification Item No. 608S: Planting, dated 06/16/2008. Any item, paragraph, article, or work contained therein unless specifically modified, added to or deleted herein shall apply where applicable.

608S.2 Submittals

ADD the following after item G:

H. Photographs of specimens of all plants shall be provided to Owner for approval at least seven days before requesting permission for delivery to the site. Photographs, taken at the nursery, shall be of the actual plants to be supplied, and shall include scale figures for reference. The Owner may visit the nursery to approve and tag particular plants, as appropriate.

I. One gallon samples of each type of mulch and each component of the planting as specified in SP601S and SS613 (topsoil mix), and one quart sample of each fertilizer component as described in SP606S.

J. Copy of current Licensed Pesticide Applicator's certificate shall be provided to Owner annually.

K. Copy of pesticide application record per Attachment A with each invoice.

L. Receipts for accredited compost / recycling facility or other City-approved facility should turfgrass clipping disposal be necessary.

M. Rhizome barrier sheet: submit sample (6"x6") and; manufacturer's product data, installation instructions and warranty.

608S.3 General

B. License Requirements

3. Irrigation.

REVISE licensing entity as follows:

Texas Commission on Environmental Quality (TCEQ)

ADD the following before "maintained" in the second sentence:

Installed and

608S.4 Materials

A. Plant Material

1. Container Plants

ADD the following before to the beginning of the section:

All containers plants will be priced according to the nature of their usage and availability on the market; the term "standard" is a commonly used plant that is widely available on the market (e.g., lantana, salvias, muhly grasses, Mexican feathergrass) and thus, is of lower price than a "premium" plant (e.g., horsetail reed, some rushes, some agaves, etc.) that is less widely use and/or available for various reasons (e.g., slower growing). Plant availability is highly dependent on the market and weather, and may change annually.

ADD the following to the end of the section:

6. Seedlings

This stock will be defined as nursery plant stock—evergreen and deciduous tree and shrubs—sold as plugs in plastic "conetainers", or similar, or that are bareroot. Seedlings are typically 12 to 18 inches tall at time of planting, depending on species.

RENUMBER 6. Other Plant Materials to be item 7

7. Other Plant Materials

E. Mulch

DELETE the paragraph in its entirety and **ADD** the following:

Contractor shall install hardwood mulch consisting primarily of organic material (shredded bark, stump grindings, composted bark) and produced from a 3 (three) inch minus screening process. The material shall be a well-graded mixture of particle sizes and must be free of refuse, ground construction debris, biosolids, and manure. It may be manufactured on or off the project site. Three inches of mulch should be installed and maintained in non-turf areas.

Gravel can be used for soil stabilization in rain gardens and biofiltration ponds ONLY. The gravel should be ¾"- to 1"-diameter washed, rounded river gravel. Crushed limestone and granite (i.e., "decomposed" granite) are not acceptable due to fines that cause clogging. Placement of gravel relative to plant materials should follow the guidelines for organic mulch.

F. Peat Moss

DELETE this item in its entirety.

G. Planting Soil Mixture

DELETE the paragraph in its entirety and **ADD** the following:

The planting soil mixture shall follow that in SP601S or SS612 (Topsoil Mix) as directed by the Owner. For turf and landscape areas, four (4) and six (6) inches minimum of soil is required, respectively, and 12 inches for tree planting.

ADD the following to the end of the section:

7. Seedlings

Seedlings should be planted as soon as possible. All stored seedlings shall be kept in a cool shaded area or unheated building, and the roots kept moist and covered (e.g., wet burlap) for no longer than two weeks. Plug seedlings should be gently removed from their containers without pulling the plants by their stems. Gently loosen any "pot-bound" roots with fingers. The planting hole should be at least six inches wide and a couple inches deeper than the plant's container. Holding the seedling in place, fill the hole about two-thirds full with soil, watering the soil thoroughly to eliminate air pockets and ensure good root to soil contact. Once the water has drained, add the rest of the soil, and gently hand pack the soil. Form a ridge of soil around the seedling large enough to catch and hold at least two gallons of water.

For a bare-root seedling, the planting hole shall be six inches deeper than the root length and at least two feet wide. Clean cut any broken or damaged roots and/or trim any extremely long roots before planting. When properly planted, a bare-root seedling's root collar shall be level with the ground, with its roots spread around the planting hole without wrapping or turning. Follow the same installation procedure for plug seedlings.

Seedling watering frequency and duration is dependent on the weather and soil type. Following Texas Forest Service recommendations, newly planted seedlings should be watered eight to ten gallons per week for every inch of stem diameter for at least the first two years after planting until establishment. Watering can be achieved with an irrigation system, truck watering, hand watering, or other techniques acceptable to the Owner, and in some cases supplemental watering may not be feasible.

Seedlings may require protection with tree shelter tubes, per the Owner's instructions. If required, payment for the tubes shall be included in the pay item for the seedlings.

H. Water

ADD the following after the first paragraph:

Refer to SS603 for specifics of the work of Temporary Landscape Irrigation.

J. Pesticides including Herbicides

ADD the following after the first paragraph:

If chemical treatment is necessary to eradicate perennial weeds, a non-selective herbicide containing Glyphosate (e.g. Roundup) is preferred for herbaceous plants. For woody plants an herbicide with the appropriate formulation of the active ingredient Triclopyr is usually preferred. Sedges (e.g. nutsedge) may be managed with a product that selectively controls plants in the genus *Cyperus* (e.g. Sedgehammer, Manage, etc.). The Contractor shall submit a pesticide application record per Attachment A with each invoice.

The City's pre-approved primary herbicide ingredients are listed below. The Contractor's Licensed Pesticide Applicator shall not use an herbicide or pesticide whose primary ingredient is not on the following list without prior written consent.

- (1) Imazamox,
- (2) Glyphosate, and
- (3) Triclopyr.

In riparian areas, use a surfactant-free glyphosate, labeled safe for aquatic use.

Organic herbicides, including acetic acid (20% vinegar) and essential oils are permitted in biofiltration ponds and rain gardens.

Herbicides should have a photosensitive dye that produces a contrasting color when sprayed on the ground. The color must disappear between two to three days after being applied. The dye must not stain surfaces, or injure plants or wildlife when applied at the manufacturer's recommended rate.

Fire ants frequently invade sites with disturbed soils. Pest management materials shall include the use of bait formulated to eliminate the entire colony, including the queen.

Example of acceptable bait materials include:

- | | |
|--------------------|--------------------------------|
| (1) Hydramethylnon | product names: Amdro®, Combat® |
| (2) Spinosad | product name: Eliminator® |
| (3) Methoprene | product name: Extinguish™ |
| (4) Abamectin | product name: Ascend™, Raid® |
| (5) Pyriproxyfen | product name: Spectracide® |

K & L. Stakes and Guys; Bracing

ADD the following after the first paragraph:

Stakes shall be metal "T" or wood posts driven outside the rootball and connected to the tree with a web fabric tape (e.g., Arbor Tie). The tape should be tied to form a figure eight twist that is not tied to the trunk, just attached to the posts. The point of contact should be only about halfway up the trunk. All stakes and web tape shall be removed after one year.

For root stapling tree stabilization, use untreated pine two-inch by two-inch wood stakes or equivalent. One-inch by one-inch wood stakes are acceptable to small trees.

ADD the following:

P. Mowing and Trimming Equipment

Turf will be maintained, where possible, with professional quality mulching mower and trimming equipment complying with City of Austin Resolution No. 040115-31 on air emissions reductions.

ADD the following:

Q. Rhizome Barrier

Barrier may be: High Density Polyethylene (HDPE), 40 mil thickness; high-impact polystyrene (HIPS) with rubberizer added and UV inhibitor, 0.040"-0.060" thickness (min).

608S.5 Construction Methods

B. Excavation of Planting Pits

2. Pit Sizes (a)

DELETE the first sentence in its entirety and replace with the following:

The planting pit should be a minimum horizontal dimension of three (3) times the width of the rootball for the following plant specifications:

2. Pit Sizes (d)

DELETE the first sentence entirety and replace with the following:

Pits shall not be excavated deeper than the depth of the plant rootball.

ADD this sentence to the end of the paragraph:

Plants larger than 1 gallon size shall be placed on firm soil at the base of the planting pit.

C. Planting Season

DELETE the first sentence of this section in its entirety and **REPLACE** it with the following:

All plantings shall be performed during the periods listed below, although vagaries of the weather require flexibility. If special conditions exist that warrant a variance in the specified planting dates, a written request shall be submitted to the Owner stating the special conditions and the proposed variance. Permission for the variance will be given if warranted in the opinion of the Owner. Any variance in the planting season will not affect the guarantee period.

DELETE the table and REPLACE with the following

PLANTING STOCK	PLANTING DATES
Containerized or container grown	September 15 to April 30
Balled and burlapped	November 15 to March 15*
Bare root	January 15 to March 15
Bag grown	September 15 to April 15
Collected/Salvaged	As designated by the Owner
Seedling – bareroot / container	November 15 to April 1*

* plants must be dormant when installed

E. Pruning Roots

ADD this sentence to the end of the paragraph:

Root pruning shall be done at the time of planting to remove damaged or undesirable roots, i.e., those that will become a detriment to future growth of the root system.

F. Pruning of Tops

ADD this sentence to the end of the paragraph:

No pruning of tops shall be done without approval of the Landscape Architect for specific cuts.

G. Planting and Backfilling

2. Depth of Transplanting

ADD this paragraph:

A tree's root flare shall be at or slightly above the finished grade. Determine how deep the root flare is in the ball before placing it in the planting hole.

- a. Determine the elevation of the root flare and ensure that it is planted at grade. This may require that the tree be set higher than the grade in the nursery.
- b. If the root flare is less than 2 inches below the soil level of the root ball, plant the tree so that the flare is even with the grade. If the flare is more than 2 inches at the center of the root ball the tree shall be rejected.

3. Balled and Burlapped Plants

REMOVE the third sentence in its entirety and REPLACE with the following:

All burlap and twice materials shall be completely removed from the root ball.

REMOVE the second paragraph in its entirety and **REPLACE** with the following:
For ball supporting devices such as wire baskets, the basket shall be cut off to six (6) inches below the shoulder of the root ball before backfilling to eliminate root – wire conflicts potentially resulting in girdling (ANSI A300 Part 6).

H. Vegetative Watering

DELETE the paragraph in its entirety and **ADD** the following:

All plants – including, but not limited to trees, shrubs, sod, seed – shall be watered immediately after installation and thereafter until establishment to maintain plants in healthy and vigorous condition. Supplemental water may also be required during drought.

Vegetative watering via a temporary irrigation system shall conform to the City's The City's Special Specification 603. When required, the irrigation system shall be fully functional before installation of plant materials.

J. Pruning

ADD this sentence to the end of the paragraph:

Bunchgrasses may require annual clipping in late winter to retain plant health but shall be cut no shorter than 18 inches.

K. Plant Supports and Bracing Trees

REMOVE the third paragraph about bracing and **REPLACE** with the following:

The Owner or their representative shall determine the need for tree support and bracing, and the type of stabilization (above ground or stapling) used.

M. Tree Trunk Protection

REMOVE the paragraph in its entirety and replace with the following:

- a. All trees required to be wrapped shall be neatly and securely wrapped with a commercial tree wrapping material approved by the Owner. If no wrapping requirements appear on the drawings, submit a drawing of the wrapping method to be used for approval.
- b. Wrapping material shall be applied from the base of the tree to the first branch.
- c. Wrapping material shall be fastened with biodegradable tape loosely wrapped in a single layer around the wrapping material. The wrap shall not be stapled nor shall it be tied with non- or slowly biodegradable tape, any synthetic tape, any synthetic or natural fiber string, or wire.
- d. All wrapping material shall be removed no later than one year after planting.

N. Mulching

REMOVE the paragraph in its entirety and replace with the following:

New plant installations shall receive mulching to a depth of three (3) inches within their water-basin, in a three-foot-diameter ring around newly planted trees or, for shrubs, a small area commensurate with their size, and across the entire landscape bed, unless otherwise indicated by the Owner. Unless otherwise stated, the Contractor shall use shredded, hardwood mulch.

P. Maintenance and Initial Plant Replacement

REMOVE "Plant Establishment" from this section and replace with "Substantial Completion".

ADD this paragraph to the end of the section:

The Contractor shall be responsible for replacement of any turfgrass under this contract when, in the opinion of the Owner, such damage or destruction has resulted from the Contractor's own action or neglect during the execution of this contract. Replacement shall be done to the satisfaction of the Owner at the Contractor's expense. Turfgrass shall be replaced as directed by the Owner with the same species, size, and quality (or better) as was originally present.

ADD the following item to the end of the section:

Q. Rhizome Barrier

Install barrier sheet material in accordance with manufacturer's instructions at locations indicated on the Drawings or per instructions from the Contract Manager.

Trench shall be dug around entire perimeter of the containment area and to depth specified by manufacturer. It shall be at least two inches shallower than height of barrier and protrude above the surface at least two inches to minimize likelihood of rhizomes escaping over the barrier. Any seam or break in the barrier shall be overlapped and fastened or extrusion welded. The trench shall be backfilled and compacted sufficiently to prevent substantial subsidence.

Revise section heading with the following:

608S.6 Plant Establishment Management Practices

ADD the following to the first paragraph:

For the purposes of this contract, the following activities will apply to the periods of both plant establishment and post-establishment maintenance. The duration of the post-establishment period shall be defined by the Contract Manager, not to exceed five years.

C. Mowing and Trimming

REMOVE the paragraphs in their entirety and replace with the following:

Contractor will mow all turf areas at least four times from March 1 through October 31. Mowing height shall be no lower than 4 inches and no higher than 6 inches. Mowing is not preferred in Vegetative Filter Strips (VFS). Clippings can be left on the turf as long

as no readily visible clumps remain on the grass surface after mowing. Otherwise, Contractor shall remove and dispose of excessive clippings at an accredited compost / recycling or other City-approved facility, and provide proof by attaching receipt to invoice. Clippings must be physically removed from hardscapes. Blowing of clippings and leaves from landscape to hardscape areas such as roadways is not permitted.

Edges along hardscapes (e.g., sidewalks, driveways) and fixed objects shall be trimmed during each mowing event. Turf around sprinkler heads shall be trimmed to prevent grass from interfering with irrigation spray. String trimmers may not be used around tree trunks.

Revise section heading with the following:

F Pest Management: Insect, Disease, Weed and Animal Control

REMOVE the paragraphs in their entirety and replace with the following:

All pesticide use shall follow the IPM standards and protocols outlined in the City of Austin Grow Green website. (Note: the term pesticides is inclusive of herbicides, fungicides, insecticides and related terms)

Common noxious woody and herbaceous weeds are listed in Tables 1 and 2 of Special Specification 609S, although the Owner may ask the Contractor to remove any plant deemed undesirable by the City. Pesticide use is generally prohibited in green stormwater facilities, but may be allowed in specific circumstances. Where permitted, pesticide use shall follow the guidelines in this specification and those stated in City of Austin's ECM 1.6.3. Contractor shall consult with and obtain prior written approval from the City when the use of an herbicide is anticipated.

The circumstances wherein herbicides may be considered for weeds (both woody and herbaceous) include the following:

- Physical, mechanical and other non-chemical methods are unlikely to be successful
- Perennial species exist (use non-chemical methods for annual weeds)
- Weeds are too numerous to be removed manually

Noxious weeds shall be removed before they set seed. Various acceptable removal techniques include hand pulling, weed wrench, hoe, weed popper, or other forked instrument. When hand weeding, remove enough of the root system to prevent resprouting. Contractor shall promptly fill any holes resulting from weed removal.

Herbicides may be considered for woody weeds (trees and shrubs) that meet the criteria noted above. A cut-stump method is often used, wherein the trunk and branches are lopped at the base and removed from the site. Many species have the ability to re-sprout after cutting. For these species, the Contractor shall apply an herbicide to the exposed trunk immediately after cutting. Other herbicide application methods may also be considered.

Herbicides may also be considered for herbaceous weeds that meet the criteria noted above. Acceptable application methods include broadcast spray and wick application to foliage. Follow-up applications of herbicide may be necessary to eradicate certain well established plants. Generally, a non-selective herbicide containing glyphosate (e.g.

Roundup) shall be used (or approved equal). In riparian areas and near water resources, use only surfactant-free glyphosate, one labeled safe for aquatic use.

Insect pests that must be managed include fire ants. Monitor the site at each maintenance visit for fire ant activity. Pest management materials shall include the use of bait formulated to eliminate the entire colony (including the queen). Refer to City of Austin IPM standards for examples of acceptable fire ant bait products. When active ant mounds are present the Contractor shall use fire ant bait, according to label directions. It is anticipated that a bait treatment will need to occur once in the spring and once in the fall.

H. Fertilization

REMOVE the paragraph in its entirety and replace with the following:

As the nutrients in fertilizer have the potential to become a water pollutant, this activity shall generally not occur in stormwater facilities. However at times there is a need to provide additional nutrients to enhance vegetative growth. This need shall be based on a soil analysis and professional expertise. If fertilization is being considered, the Contractor must first contact the City representative for consent. Fertilizer may be used during the establishment period only. Fertilizer must be slow-release, with no more than 1lb of nitrogen/1000 s.f. allowed per year, and no more than ½ lb per application. After establishment, stormwater facilities are to be maintained without fertilizers.

ADD the following sections:

J. Aeration

On direction of the Owner, Contractor shall aerate turfgrass in the fall. Aerate to six-inch depth with standard aeration equipment.

K. Reporting of Maintenance Visits

Records shall be kept of maintenance tasks, including watering and IPM activities. A written list of site visits noting the action taken, time, date, and personnel shall be provided to the Contract Manager on a quarterly basis.

608S.7 Acceptability of Plants

ADD the following:

Progress inspections are required before planting begins and after completion of specified work. Contractor shall also schedule inspection once a month during the plant establishment period. Please contact the Owner to schedule an inspection 72 hours before scheduled event.

Article 608.9 Payment

ADD the following pay items:

SPECIAL PROVISION**SP608S
Planting**

Pay Item No. SP 608S-1Ai:	Planting, 4" container, standard	EA
Pay Item No. SP 608S-1Aii:	Planting, 4" container, premium	EA
Pay Item No. SP 608S-1Bi:	Planting, 1 gal. container, standard	EA
Pay Item No. SP 608S-1Bii:	Planting, 1 gal. container, premium	EA
Pay Item No. SP 608S-1Ci:	Planting, 3 gal. container, standard	EA
Pay Item No. SP 608S-1Cii:	Planting, 3 gal. container, premium	EA
Pay Item No. SP 608S-1Di:	Planting, 5 gal. container, standard	EA
Pay Item No. SP 608S-1Dii:	Planting, 5 gal. container, premium	EA
Pay Item No. SP 608S-1Ei:	Planting, 10 gal. container, standard	EA
Pay Item No. SP 608S-1Eii:	Planting, 10 gal. container, premium	EA
Pay Item No. SP 608S-1Fi:	Planting, 15 gal. container, standard	EA
Pay Item No. SP 608S-1Fii:	Planting, 15 gal. container, premium	EA
Pay Item No. SP 608S-1Gi:	Planting, 30 gal. container, standard	EA
Pay Item No. SP 608S-1Gii:	Planting, 30 gal. container, premium	EA
Pay Item No. SP 608S-1Hi:	Planting, 1.5" caliper tree, standard	EA
Pay Item No. SP 608S-1Hii:	Planting, 1.5" caliper tree, premium	EA
Pay Item No. SP 608S-1Ii:	Planting, 2" caliper tree, standard	EA
Pay Item No. SP 608S-1Iii:	Planting, 2" caliper tree, premium	EA
Pay Item No. SP 608S-1Ji:	Planting, 3" caliper tree, standard	EA
Pay Item No. SP 608S-1Jii:	Planting, 3" caliper tree, premium	EA
Pay Item No. SP 608S-1Ki:	Planting, tree/shrub seedling - bareroot	EA
Pay Item No. SP 608S-1Kii:	Planting, tree/shrub seedling - container	EA
Pay Item No. SP 608S-3A:	Hardwood Mulch	CY
Pay Item No. SP 608S-3B:	Gravel Soil Stabilization for Stormwater Facilities	CY
Pay Item No. SP 608S-4A:	Tree Support System, per tree	EA
Pay Item No. SP 608S-4B:	Seedling Shelter Tubes	EA
Pay Item No. SP 608S-5A:	Turfgrass Maintenance, Mowing and Edging	SY
Pay Item No. SP 608S-5B:	Turfgrass Maintenance, Aeration	SY
Pay Item No. SP 608S-6:	Herbaceous and Woody (non-tree) Plant Pruning	HR
Pay Item No. SP 608S-7A:	Management Practices, Weeding, Physical Removal and Disposal	HR
Pay Item No. SP 608S-7B:	Management Practices, Weeding, Chemical Treatment	HR
Pay Item No. SP 608S-7C:	Management Practices, Fire Ant Management	SY
Pay Item No. SP 608S-7D:	Rhizome Barrier	LF
Pay Item No. SP 608S-8:	Debris and Litter Removal	SY

End

Contractor can contact Owner for an Excel version of this form.

COA - Pesticide Application Tracking Log (for all Pesticide / Herbicide Applications on COA owned properties - Applicator must be licensed and have authorization to perform such actions)

Department: _____ Division: _____ Division SPOC: _____ Beginning Date: _____ End Date: _____

[illegible]

1. Latitude / Longitude coordinates are required if the area being treated does not have physical address and should be in **DEGREE - DECIMAL MINUTES** format.
2. Site Description: General information to further identify the site, each entry may only describe a single location.
3. Identify whether the location of application is Aquatic (to include river banks and water bodies) or Terrestrial (All land applications). Mark (A) for aquatic or (T) for terrestrial.
4. Total contiguous area treated measured in square feet or acreage.
5. Temperature, Wind speed and Wind Direction must all be in approved ranges for specified product to be applied.
6. Product information must include the Common or Scientific name of the pest being treated, the common name of the product used and the EPA registration number.
7. Specify product type: (F) = Fungicide, (I) = Insecticide, (H) = Herbicide, (R) = Rodenticide, (L) = Larvicide.
8. Specify method of treatment using one of the following codes:
 (BS) = Spot Spray or backpack, (WW) = herbicide wind, brush or wick, (BSB) = Boom Sprayer, (GT) = Grate / Treat,
 (CS) = Cut Stump, (IH) = Injection, (GR) = Granular, (UL) = Ultra Low Volume, (BP) = Bait / Pellets.
9. Specify the manufacturer's recommended application rate of the product being applied. Total amount of product used, and the Beginning / End time of application.
Notes:
 (A) New entry required for each specific product application even if they are applied at the same location, date and time.
 (B) This form is not intended to be used for Aerial applications.
 (C) This form is in accordance with Texas Administrative Code, Chapter 7, Subchapter D, Rule §7.33.

Close-Out Signature: _____ Date: _____
To be signed by reviewing manager

Copies of this log must be submitted to Denise.Delaney@daustintexas.gov - Records shall be maintained for a minimum of two years. Last Revised Date: 9/18/2013

Item No. 609S

Native Grassland Seeding and Planting for Erosion Control

609S.1 Description

This item shall govern the preparation of a seeding and planting area to the lines and grades indicated on the Drawings. This may include seedbed preparation, sowing of seeds, planting of rooted plants, watering, hydromulch, compost and other management practices, as indicated in the Drawings or as directed by the Engineer or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, inch-pound units are given preference with SI units shown within parentheses.

609S.2 Submittals

The submittal requirements for this specification item shall include:

- A. Identification of the species, source, mixture and rate of application of the seeding.
- B. Type of mulch or compost.
- C. Watering frequency and amount.
- D. Type of management practices.

609S.3. Materials

- A. The seed furnished shall be of the previous season's crop and the date of analysis shown on each bag shall be within twelve months of the time of delivery to the project. Each variety of seed shall be furnished and delivered in separate bags or containers. A sample of each variety of seed shall be furnished for analysis and testing when directed by the Engineer or designated representative.

The amount of seed planted per 1000 square feet (93 square meters) shall be of the type specified in section 609S.5.

- B. Water shall be clean and free of industrial wastes and other substances harmful to the growth of grass in the area irrigated.
- C. Topsoil see Standard Specification Item No. 601S.3(A)
- D. A least toxic, integrated pest management (IPM) approach shall be used to control weeds. A written request for approval of weed control product(s) and/or materials shall be submitted to the City of Austin IPM program coordinator (499-2550) for approval.

- E. Rooted plants must be healthy and free of pests. The root system should be well established and in proportion to the top growth.

609S.4 Construction Methods

A. General.

The Contractor shall limit preparation to areas that will be immediately seeded. All noxious weeds shall be eliminated by application of a herbicide and/or by physical removal (by the roots) prior to and/or during the seeding operation. The following list of plants are considered noxious weeds:

Table 1: Weed List

Weed Type	Botanical Name	Common Name
Herb	Ambrosia spp.	Ragweed
Grass	Bothriochloa ischaemum	K.R. Bluestem
Grass	Bromus unioloides	Rescue Grass
Herb	Cenchrus spp.	Sandbur
Herb	Cnidoscolus texanus	Bull Nettle
Herb	Convolvulus spp.	Bindweed
Grass	Cynodon dactylon	Bermudagrass*
Herb	Cyperus esculentus	Yellow Nutsedge (Nut-grass)
Herb	Cyperus rotundus	Purple Nutsedge (Nut-grass)
Grass	Digitaria spp.	Crab Grass
Herb	Medicago sp.	Bur-Clover
Grass	Paspalum dilatatum	Dallis Grass
Grass	Sorghum halapense	Johnson Grass
Herb	Torilis arvensis	Beggar's-tick
Vine	Toxicodendron radicans	Poison Ivy
Herb	Urtica spp.	Stinging Nettle

B. Seed Bed Preparation.

After the designated areas have been rough graded, a suitable seedbed shall be prepared. In areas where cut or fill is required, a minimum of 6 inches (150 mm) of topsoil (see Section 609S.3.C) shall be placed or existing soil (that is not infested with weeds or weed rootstock) stockpiled over the entire planting area.

In areas with no soil disturbance, the weeds shall be eliminated and a minimum of 2 inches (50 mm) of topsoil, if none currently exists, shall be placed. An even seedbed shall be prepared with limited irregularities, lumps or soil clods and the surface shall be raked to facilitate seed to soil contact.

C. Watering.

All watering shall comply with City of Austin Land Development Code requirements. Seeded areas shall immediately be watered with a minimum

of 5 gallons of water per square yard (22.5 liters of water per square meter) or as needed and in the manner and quantity as directed by the Engineer or designated representative.

Watering applications shall insure that the seedbed is maintained in a moist condition favorable for the growth of grass. Watering shall continue until minimum coverage is achieved and accepted by the Engineer or designated representative. Watering may be postponed immediately after a 1/2 inch (12.5 mm) or greater rainfall on the site but shall be resumed before the soil dries out.

Availability of water from the Austin Water Utility will be limited as stated under the Water Conservation Standard, City of Austin Land Development Code Chapter 6-2, Article II, "Water Use Management Plan Established".

The use of potable water will be restricted as stated in City of Austin Land Development Code Sections 6-4-73, 6-4-54, 6-4-63, 6-4-64, 6-4-65, 6-4-81, 6-4-92, 15-9-37(D) and 15-9-101(B).

609S.5 Native Grassland Seeding and Planting

All areas require both seed and rooted plants. Seeding and planting shall be performed in accordance with the requirements hereinafter described. The optimum depth for seeding shall be from 1/16 inch (1 1/2 millimeters) to 1/8 inch (3 millimeters). Seed shall be applied by a method that achieves consistent distribution and proper seed to soil contact (i.e. hand broadcasting, hydromulch, or drill method). Mulching is not required.

Species substitution, when necessary due to availability, shall be approved by the Engineer or designated representative. Only native species adapted for the designated environmental conditions shall be allowed as substitutes. Shorter growing natives such as Buffalograss should be sodded around manholes or other structures requiring higher visibility for access.

If the native grassland is being installed during the cool season (November 1 to February 15), the cool season cover crop species (as listed) shall be included in the mix.

The seed and rooted plant mixtures shall be applied in accordance with appropriate 'growing environments' (Upland Full Sun—Table 2, Upland Shade-Dappled—Table 3 and Facultative Moderate to High Moisture—Table 4).

Table 2. Upland Species, Full Sun Areas

Common Name	Comments	Botanical Name	Seed application rate lbs/1000 sq. ft. (kg/100 sq. m.)	Rooted Plants Size & Spacing
Buffalo Grass	grass	Buchloe dactyloides	0.3 (0.15)	1 - 16" x 24" piece of sod @ 10' (3m) ctrs.
Blue Grama	grass	Bouteloua gracilis	0.2 (0.1)	Not required
Green Srrangletop	grass	Leptochloa dubia	0.4 (0.2)	
Indian Grass	grass	Sorghastrum nutans	0.2 (0.1)	1 gal @ 10 ft.' (3m) ctrs.
Little Bluestem	grass	Schizachyrium scoparium	0.2 (0.1)	
Prairie Wild Rye	grass	Elymus canadensis	0.2 (0.1)	Not required
Purple Threeawn	grass	Aristida purpurea	0.2 (0.1)	
Sideoats Grama	grass	Bouteloua curtipendula	0.3 (0.15)	
Bluebonnet	wildflower	Lupinus texensis	0.4 (0.2)	Not required
Clover (Purple Prairie)	wildflower	Petalostemum purpurea	0.1 (0.05)	Not required
Coreopsis (Plains)	wildflower	Coreopsis tinctoria	0.05 (0.025)	Not required
Goldenrod	wildflower	Solidago altissima	0.02 (0.01)	Not required
Greenthread	wildflower	Thelesperma filifolium	0.075 (0.037)	Not required
Indian Blanket	wildflower	Gaillardia pulchella	0.15 (0.075)	Not required
Lemon Mint	wildflower	Monarda citriodora	0.06 (0.03)	Not required
Mexican Hat	wildflower	Ratibida columnaris	0.05 (0.025)	Not required
Pink Evening Primrose	wildflower	Oenothera speciosa	0.02 (0.01)	Not required
Sunflower (Common)	wildflower	Helianthus annuus	0.075 (0.037)	Not required
Cereal rye grain*	cool season cover crop	Elymus	0.5 (0.25)	Not required
Oats*	cool season cover crop	Avena sativa	0.2 (0.10)	Not required
Wheat*	cool season cover crop	Triticum aestivum	0.3 (0.15)	Not required
TOTAL**			Winter: 4.0 (2.0) Summer 3.0 (1.5)	Rooted species mixed equally @ 10 ft. (3 m) ctrs.

- * Plant only between Oct. 1 and Jan. 31. Non-persistent winter cover crop for erosion control.
- ** Any unavailable species can be substituted with the same quantity of another species from this list or another species approved by the Engineer or designated representative.

Table 3. Upland Species, Shade-Dappled Light Areas

Common Name	Comments	Botanical Name	Seed Application Rate lbs/1000 sq. ft. (kg/100 sq. m.)	Rooted Plants Size & Spacing
Meadow Sedge*	sedge	Carex peridentata	No seed required	1 gal. @ 10' (3m) ctrs.
Inland Seaoats**	grass	Chasmanthium latifolium	0.5 (0.25)	
Prairie Wild Rye	grass	Elymus canadensis	0.75 (0.37)	Not required
Sideoats Grama	grass	Bouteloua curtipendula	0.75 (0.37)	1 gal. @ 10' (3m) ctrs.
Purple Coneflower	wildflower	Echinacea purpurea	0.1 (0.05)	Not required
Coreopsis (Lanceleaf)	wildflower	Coreopsis lanceolata	0.1 (0.05)	Not required
Sage (Scarlet)	wildflower	Salvia coccinea	0.1 (0.05)	Not required
Drummond Phlox	wildflower	Phlox Drummondii	0.1 (0.05)	Not required
Black-Eyed Susan	wildflower	Rudbeckia hirta	0.03 (0.015)	Not required
Cutleaf Daisy	wildflower	Engelmannia pinnatifida	0.2 (0.10)	Not required
Tall Aster	wildflower	Aster praealtus	0.02 (0.01)	Not required
Illinois bundleflower	wildflower	Desmanthus illinoensis	0.15 (0.075)	Not required
Standing cypress	wildflower	Ipomopsis rubra	0.1 (0.05)	Not required
Winecup	wildflower	Callirhoe involucrata	0.1 (0.05)	Not required
Cereal rye grain***	cool season cover crop	Secale cereale	0.5 (0.25)	Not required
Oats***	cool season cover crop	Avena sativa	0.2 (0.1)	Not required
Wheat***	cool season cover crop	Triticum aestivum	0.3 (0.15)	Not required
TOTAL****			Winter: 4.0 (2.0) Summer: 3.0 (1.5)	Rooted species mixed equally @ 10' (3m) ctrs.

- * If unavailable replace with other shade and drought-tolerant sedge species.
- ** If unavailable replace with Prairie Wild Rye.
- *** Plant only between Oct. 1 and Jan. 31. Non-persistent winter cover crop for erosion control.
- **** Any unavailable species can be substituted with the same quantity of another species from this list or another species approved by the Engineer or designated representative.

Table 4. Facultative Species, Moderate – High Moisture Areas

Common Name	Comments	Botanical Name	Seed application rate lbs/1000 sq. ft. (kg/100 sq. m.)	Rooted Plants Size & Spacing
Big Bluestem	grass	<i>Andropogon gerardii</i>	0.2 (0.1)	1 gal. @ 10' (3m) ctrs
Big Muhly (Lindheimers)	grass	<i>Muhlenbergia lindheimeri</i>	0.2 (0.1)	
Bushy Bluestem	grass	<i>Andropogon glomeratus</i>	0.2 (0.1)	
Eastern Gama Grass	grass	<i>Tripsacum dactyloides</i>	0.3 (0.15)	
Indian Grass	grass	<i>Sorghastrum nutans</i>	0.2 (0.1)	
Inland Seaoats	grass	<i>Chasmanthium latifolium</i>	0.3 (0.15)	
Prairie Wild Rye	grass	<i>Elymus canadensis</i>	0.3 (0.15)	Not required
Sand Lovegrass	grass	<i>Eragrostis trichodes</i>	0.2 (0.1)	
Switchgrass	grass	<i>Panicum virgatum</i>	0.1 (0.05)	1 gal. @ 10' (3m) ctrs
Black-Eyed Susan	wildflower	<i>Rudbeckia hirta</i>	0.06 (0.03)	Not required
Bundleflower (Illinois)	wildflower	<i>Desmanthus illinoensis</i>	0.35 (0.17)	Not required
Clover (Purple Prairie)	wildflower	<i>Petalostemum purpurea</i>	0.1 (0.05)	Not required
Coneflower (Clasping)	wildflower	<i>Rudbeckia amplexicaulis</i>	0.06 (0.03)	Not required
Coreopsis (Plains)	wildflower	<i>Coreopsis tinctoria</i>	0.05 (0.025)	Not required
Goldenrod	wildflower	<i>Solidago altissima</i>	0.03 (0.015)	Not required
Lazy Daisy	wildflower	<i>Aphanostephus</i> sp.	0.03 (0.015)	Not required
Lemon Mint	wildflower	<i>Monarda citriodora</i>	0.07 (0.035)	Not required

Sunflower (Common)	wildflower	Helianthus annuus	0.15 (0.075)	Not required
Sunflower (Maximilian)	wildflower	Helianthus maximiliani	0.1 (0.05)	Not required
Cereal rye grain*	cool season cover crop	Secale cereale	0.5 (0.25)	Not required
Oats*	cool season cover crop	Avena sativa	0.2 (0.10)	Not required
Wheat*	cool season cover crop	Triticum aestivum	0.3 (0.15)	
TOTAL**			winter: 4.0 (2.0) summer: 3.0 (1.5)	Rooted species mixed equally @ 10' (3m) ctrs.

- * Plant only between Oct. 1 and Jan. 31. Non-persistent winter cover crop for erosion control.
- ** Any unavailable species can be substituted with the same quantity of another species from this list or another species approved by the Engineer or designated representative.

609S.6 Management Practices

Weeds, as defined in the Weed List (Table 1), shall be controlled in the most efficient manner possible. The timing of weed control may occur prior to soil disturbance, just before the installation of seed, and/or during the period of grassland establishment. Weed control shall be introduced at one or all of these times, so that the greatest control is achieved. The preferred method of control is to remove weeds, either by physical or mechanical means, when the site is conducive (e.g. when the ground is moist) to this approach.

The entire root system of perennial weeds shall be removed to prevent re-sprouting. Weeds may be controlled with an approved contact, systemic herbicide, provided the product is used with appropriate care and is applied in accordance with label instructions and the following guidelines:

1. Herbicide shall not be applied when the wind is greater than 8 mph (12.9 kph),
2. Herbicide shall not be applied when rainfall is expected within 24 hours,
3. Herbicide shall not contact surface water, i.e. creeks, rivers, and lakes,
4. Herbicide shall not contact desirable vegetation (a wicking method shall be used, if necessary, to accurately contact target weed only during application).

The Engineer or designated representative shall be consulted to determine appropriate weed control management when weeds are located in an environmentally sensitive location (e.g. near water or adjacent to a critical environmental feature).

609S.7 Measurement

Work and acceptable material for "Native Grasslands for Erosion Control" will be measured by the square yard (square meter: 1 square meter equals 1.196 square yards) or by the acre (hectare: 1 hectare equals 2.471 acres), complete in place, with a minimum of 95 percent coverage with no bare areas exceeding 16 square feet (1.5 square meters) and a 1 1/2 inch (40 millimeters) stand of grass. Bare areas shall be reprepared and reseeded as required by the Engineer or designated representative in order to develop an acceptable stand of grass.

609S.8 Payment

The work performed and materials furnished and measured will be paid for at the unit bid price for "Native Grasslands For Erosion Control" of the method specified on the Drawings.

The unit bid price shall include full compensation for furnishing all materials, including all topsoil, water, seed, or fertilizer or mulch and for performing all operations necessary to complete the work.

Payment will be made under one or more of the following pay items:

Pay Item No. 609S-A:	Topsoil and Seedbed Preparation	Per Square Yard.
Pay Item No. 609S-B:	Topsoil and Seedbed Preparation	Per Acre.
Pay Item No. 609S-C:	Native Grassland Seeding and Planting	Per Square Yard.
Pay Item No. 609S-D:	Native Grassland Seeding and Planting	Per Acre.
Pay Item No. 609S-E:	Watering	Per Square Yard
Pay Item No. 609S-F:	Watering	Per Acre
Pay Item No. 609S-G:	Management Practices	Per Square Yard
Pay Item No. 609S-H:	Management Practices	Per Acre

End

SPECIFIC CROSS REFERENCE MATERIALS**Specification Item 609S "Native Grassland Seeding and Planting for Erosion Control"****City of Austin Standard Specifications**

<u>Designation</u>	<u>Description</u>
Item No. 130S	Borrow
Item No. 606S	Fertilizer

City of Austin Land Development Code

<u>Designation</u>	<u>Description</u>
Section 6-4-52	Water Use Management Plan Established
Section 6-4-53	Applicability
Section 6-4-54	Compliance Required
Section 6-4-63	Permanent Water Use Restrictions
Section 6-4-64	Water Conservation Stage One Regulations
Section 6-4-65	Water Conservation Stage Two Regulations
Section 6-4-81	Variance
Section 6-4-92	Penalty
Section 15-9-37(D)	Customer's Responsibilities
Section 15-9-101(B)	Basis for Termination of Service

RELATED CROSS REFERENCE MATERIALS**Specification Item 609S "Native Grassland Seeding and Planting for Erosion Control"****City of Austin Standard Specifications**

<u>Designation</u>	<u>Description</u>
Item No. 601S	Salvaging and Placing Topsoil
Item No. 602S	Sodding for Erosion Control
Item No. 604S	Seeding (Non-Native) for Erosion Control
Item No. 605S	Soil Retention Blanket
Item No. 607S	Slope Stabilization
Item No. 608S	Planting

City of Austin Standards (Details)

<u>Standard No.</u>	<u>Description</u>
627S-1	Grass Lined Swale
62S7-2	Grass Lined Swale W/ Stone Center
633S-1	Landgrading

Texas Department of Transportation: Standard Specifications for
Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 160	Furnishing and Placing Topsoil
Item No. 162	Sodding for Erosion Control
Item No. 164	Seeding for Erosion Control
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 169	Soil Retention Blanket
Item No. 180	Wildflower Seeding
Item No. 192	Roadside Planting and Establishment

**SPECIAL PROVISION TO
Standard Specification Item No. 609S Native Grassland Seeding and Planting for
Erosion Control (Version 08/18/10)**

These special provisions serve to modify, add to, and/or delete from the City of Austin Standard Technical Specification Item No. 609S: Native Grassland Seeding and Planting for Erosion Control, dated 8/18/2010. Any item, paragraph, article, or work contained therein unless specifically modified, added to or deleted herein shall apply where applicable.

Article 609S.2 Submittals

Add the following:

- E. All components of hydroseed slurry, including tacking agent, fertilizers, and proposed mulch
- F. Type of hydraulic seeding equipment and nozzles proposed for use.
- G. Delivery tickets indicating the quantity of each type of seed delivered to the site.
- H. Invoice showing certification of Hydromulch/seed mix as Bonded Fiber Matrix (BFM) or Fiber Reinforced Matrix (FRM).

Article 609S.3 Materials

Add the following:

- F. Hydromulch for permanent vegetative stabilization materials may include:
 - (1) Bonded Fiber Matrix (BFM): organic defibrated fibers and cross-linked hydro-colloidal tackifiers. Refer to ECM Table 1.4.7-C
 - (2) Fiber Reinforced Matrix (FRM): organic defibrated fibers produced from grinding clean, whole wood chips, crimped interlocking fibers, cross-linked insoluble hydro-colloidal tackifiers and reinforced natural and/or synthetic fibers.

Article 609S.4 Construction Methods, Table 1: Weed List

Add the following to Table 1, Weed List:

Weed Type	Botanical Name	Common Name
Tree	<i>Acacia</i> spp.	Acacia
Tree	<i>Salix nigra</i>	Willow

Add the following

Table 2, Invasive Species List

SPECIAL PROVISION

does not conform to table in 609\$.4 **SP609S**

Common Name	Botanical Name
Giant reed	<i>Arundo donax</i>
Common water hyacinth	<i>Eichhornia crassipes</i>
Hydrilla	<i>Hydrilla verticillata</i>
Glossy privet	<i>Ligustrum lucidum</i>
Chinaberry tree	<i>Melia azedarach</i>
Golden bamboo	<i>Phyllostachys aurea</i>
Kudzu	<i>Pueraria montana var. lobata</i>
Bastard cabbage	<i>Rapistrum rugosum</i>
Johnson grass	<i>Sorghum halepense</i>
Salt cedar	<i>Tamarix ramosissima</i>
Tree of heaven	<i>Ailanthus altissima</i>
Paper mulberry	<i>Broussonetia papyrifera</i>
Malta star-thistle	<i>Centaurea melitensis</i>
Elephant ears	<i>Colocasia esculenta</i>
Bermudagrass	<i>Cynodon dactylon</i>
Chinese parasoltree	<i>Firmiana simplex</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Catclawvine	<i>Macfadyena unguis-cati</i>
Sacred bamboo	<i>Nandina domestica</i>
Chinese pistache	<i>Pistacia chinensis</i>
Scarlet firethorn	<i>Pyracantha coccinea</i>
Japanese netvein hollyfern	<i>Cyrtomium falcatum</i>
Bluestem, King Ranch	<i>Bothriochloa ischaemum</i>

Add the following:

D. Seeding

Apply seed uniformly with a seed spreader, drill, cultipacker seeder or hydroseeder.

E. Protection of Seed Bed with Hydromulch or Soil Retention Blanket.

Newly-installed seeding must be protected by hydromulch or soil retention blanket (refer to Standard Specification 605S Soil Retention Blanket) immediately after seeding.

Protection of the seed bed shall occur in a manner that will allow seed germination and that encourage effective vegetative growth. Hydromulching shall comply with requirements of City of Austin, Environmental Criteria Manual (ECM) Section 1.4.0.

1. Hydromulch

Permanent vegetative stabilization with Hydromulch shall comply with the requirements of ECM Table 1.4.7-C using either:

- (a) Bonded Fiber Matrix (BFM): 80% organic defibrated fibers and 10% tackifier (Refer to ECM Table 1.4.7-D for BFM properties), or
(b) Fiber Reinforced Matrix (FRM): 65% organic defibrated fibers, 25% reinforcing fibers or less, and 10% tackifier (Refer to ECM Table 1.4.7-E for FRM properties).

Article 609S.5 Native Grassland Seeding and Planting

Revise the first paragraph, last sentence:

Seed shall be applied by a method that achieves consistent distribution and proper seed to soil contact (i.e., hand broadcasting, seed spreader, cultipacker seeder, hydromulch, or drill method). Mulching is not required.

Article 609S.6 Management Practices

Add the following:

Common noxious weeds are in Table 1 and City of Austin-defined Invasive Species are in Table 2, although the Contract Manager may ask the Contractor to remove any plant deemed undesirable by the City. Herbicide and pesticide use is prohibited in certain green stormwater infrastructure facilities, including vegetated filter strips. Where permitted, herbicide and pesticide should follow the guidelines in this specification and those stated in City of Austin's ECM 1.6.3.

Noxious woody vegetation shall be removed before they set seed. Various acceptable removal techniques include hand pulling, weed wrench, hoe, weed popper, or other forked instrument. When hand weeding, the entire root system of the weed shall be removed. Woody weeds that cannot be removed completely shall be lopped at the base and removed from the site. To prevent re-sprouting, Contractor shall apply an herbicide on the exposed trunk immediately after cutting. Contractor shall promptly fill any holes resulting from weed removal.

In areas where herbaceous weeds are too numerous to be removed manually, the Contractor may use an herbicide (refer to Special Specification 608S.4, J for list of pre-approved herbicides). Acceptable application methods include broadcast spray, wipe on foliage, and cut-stump treatment. Follow-up applications of herbicide may be necessary to eradicate certain well established plants. Contractor shall consult with and obtain prior written approval from the City when they anticipate use of an herbicide.

When fire ant mounds are present, Contractor shall use fire ant bait according to label directions. Refer to Special Specification 608S.4, J for list of acceptable fire ant bait. It is anticipated that a bait treatment will need to occur once in the Spring and once in the Fall.

Article 609S.8 Payment

Add the following:

Pay Item No. SP 609S-C1: Native Grassland Seeding and planting, seed spreader & hand plant container plants, per Square Yard

Pay Item No. SP 609S-C2: Native Grassland Seeding, Drill or Cultipacker Seeder & hand plant container plants, per Square Yard

Pay Item No. SP 609S-C3: Native Grassland Seeding, Bonded Fiber Matrix or Fiber Reinforced Matrix Hydromulch & hand plant container plants, per Square Yard

End

Native Grassland Seeding and Planting for Erosion Control

**SPECIAL PROVISION To
Standard Specification Item 609S (Version 08/18/10)
Native Grassland Seeding and Planting for Erosion Control**

These special provisions serve to modify, add to, and/or delete from the City of Austin Standard Technical Specification Item No. 609S: Native Grassland Seeding and Planting for Erosion Control, dated 8/18/2010. Any item, paragraph, article, or work contained therein unless specifically modified, added to or deleted herein shall apply where applicable.

609S.2 Submittals

ADD the following to the end of the section:

- E. All components of hydroseed slurry, including tacking agent, fertilizers, and proposed mulch
- F. Type of hydraulic seeding equipment and nozzles proposed for use.
- G. Delivery tickets indicating the quantity of each type of seed delivered to the site.
- H. Invoice showing certification of Hydromulch/seed mix as Bonded Fiber Matrix (BFM) or Fiber Reinforced Matrix (FRM). Required Inspections
- I. Meetings / Inspections Required During Construction:
 - a. After rough grading is complete, before topsoil (per SP601S or SS603) is spread for fine grading. Notify Owner in advance to schedule inspection.
 - b. After topsoil is placed but before plants are installed. Notify Owner in advance to schedule inspection.
 - c. After plant installation is complete. Notify Owner in advance to schedule inspection.

609S.3 Materials

ADD the following:

- F. Hydromulch for permanent vegetative stabilization materials may include:
 - (1) Bonded Fiber Matrix (BFM): organic defibrated fibers and cross-linked hydro-colloidal tackifiers. Refer to ECM Table 1.4.7-C
 - (2) Fiber Reinforced Matrix (FRM): organic defibrated fibers produced from grinding clean, whole wood chips, crimped interlocking fibers, cross-linked insoluble hydro-colloidal tackifiers and reinforced natural and/or synthetic fibers.

Native Grassland Seeding and Planting for Erosion Control

609S.4 Construction Methods, Table 1: Weed List

ADD the following after Table 1:

Table 2, Invasive Species List

Type	Botanical Name	Common Name
Aquatic	<i>Eichhornia crassipes</i>	Water hyacinth
Aquatic	<i>Hydrilla verticillata</i>	Hydrilla
Aquatic	<i>Myriophyllum spicatum</i>	Eurasian watermilfoil
Grass	<i>Arundo donax</i>	Giant reed
Grass	<i>Bothriochloa ischaemum</i> var. <i>songarica</i>	Bluestem, King Ranch
Grass	<i>Cynodon dactylon</i>	Bermudagrass (common)
Grass	<i>Phyllostachys aurea</i>	Golden bamboo
Grass	<i>Sorghum halepense</i>	Johnson grass
Herb	<i>Centaurea melitensis</i>	Maltese star thistle
Herb	<i>Colocasia esculenta</i>	Elephant ear
Herb	<i>Cyrtomium falcatum</i>	Japanese netvein hollyfern
Herb	<i>Rapistrum rugosum</i>	Bastard cabbage
Herb	<i>Verbena brasiliensis</i>	Brazilian verbain
Shrub	<i>Ligustrum quihuei</i> , <i>sinense</i>	Privets, small leaf
Shrub	<i>Nandina domestica</i>	Sacred bamboo
Shrub	<i>Photinia serratifolia</i> & <i>x frazeri</i>	Photinia, Taiwanese & red tipped
Shrub	<i>Pyracantha coccinea</i>	Scarlet firethorn
Shrub	<i>Tamarix</i> spp.	Salt cedar
Shrub	<i>Vitex agnus-castus</i>	Lilac chaste-tree
Tree	<i>Ailanthus altissima</i>	Tree of heaven
Tree	<i>Albizia julibrissin</i>	Mimosa, Silk tree
Tree	<i>Broussonetia papyrifera</i>	Paper mulberry
Tree	<i>Firmiana simplex</i>	Chinese parasol tree
Tree	<i>Ligustrum lucidum</i> , <i>japonicum</i> , <i>vulgare</i>	Privets, large leaf
Tree	<i>Melia azedarach</i>	Chinaberry tree
Tree	<i>Pistacia chinensis</i>	Chinese pistache
Tree	<i>Triadica sebifera</i>	Chinese tallow tree
Vine	<i>Lonicera japonica</i>	Japanese honeysuckle
Vine	<i>Macfadyena unguis-cati</i>	Catclaw vine
Vine	<i>Pueraria montana</i> var. <i>lobata</i>	Kudzu
Vine	<i>Wisteria sinensis</i>	Chinese wisteria

Native Grassland Seeding and Planting for Erosion Control

ADD the following items:

D. Seeding

Apply seed uniformly with a seed spreader, drill, cultipacker seeder or hydroseeder.

E. Protection of Seed Bed with Hydromulch or Soil Retention Blanket

Newly-installed seeding must be protected by hydromulch or soil retention blanket (refer to Standard Specification 605S Soil Retention Blanket) immediately after seeding. Protection of the seed bed shall occur in a manner that will allow seed germination and that encourage effective vegetative growth. Hydromulching shall comply with requirements of City of Austin, Environmental Criteria Manual (ECM) Section 1.4.0.

1. Hydromulch

Permanent vegetative stabilization with Hydromulch shall comply with the requirements of ECM Table 1.4.7-C using either:

- (a) Bonded Fiber Matrix (BFM): 80% organic defibrated fibers and 10% tackifier (Refer to ECM Table 1.4.7-D for BFM properties), or
- (b) Fiber Reinforced Matrix (FRM): 65% organic defibrated fibers, 25% reinforcing fibers or less, and 10% tackifier (Refer to ECM Table 1.4.7-E for FRM properties).

609S.5 Native Grassland Seeding and Planting

ADD items to the parenthesis in the first paragraph, second last sentence:

seed spreader, cultipacker seeder

609S.6 Management Practices

ADD the following paragraphs to the end of the section:

Common noxious weeds are in Table 1 and City of Austin-defined Invasive Species are in Table 2, although the Contract Manager may ask the Contractor to remove any plant deemed undesirable by the City. Herbicide and pesticide use is prohibited in certain green stormwater infrastructure facilities, including vegetated filter strips. Where permitted, herbicide and pesticide should follow the guidelines in this specification and those stated in City of Austin's ECM 1.6.3.

Noxious woody vegetation shall be removed before they set seed. Various acceptable removal techniques include hand pulling, weed wrench, hoe, weed popper, or other forked instrument. When hand weeding, the entire root system of the weed shall be removed. Woody weeds that cannot be removed completely shall be lopped at the base and removed from the site. To prevent re-sprouting, Contractor shall apply an herbicide on the exposed trunk immediately after cutting. Contractor shall promptly fill any holes resulting from weed removal.

Native Grassland Seeding and Planting for Erosion Control

In areas where herbaceous weeds are too numerous to be removed manually, the Contractor may use an herbicide (refer to Special Specification 608S.4, J for list of pre-approved herbicides). Acceptable application methods include broadcast spray, wipe on foliage, and cut-stump treatment. Follow-up applications of herbicide may be necessary to eradicate certain well established plants. Contractor shall consult with and obtain prior written approval from the City when they anticipate use of an herbicide.

When fire ant mounds are present, Contractor shall use fire ant bait according to label directions. Refer to Special Specification 608S.4, J for list of acceptable fire ant bait. It is anticipated that a bait treatment will need to occur once in the spring and once in the fall.

609S.8 Payment

DELETE the following pay items:

- Pay Item No. SP 609S-A:** Topsoil and Seedbed Preparation Per Square Yard.
- Pay Item No. SP 609S-B:** Topsoil and Seedbed Preparation Acre.
- Pay Item No. SP 609S-C:** Native Grassland Seeding and Planting Per Square Yard.
- Pay Item No. SP 609S-D:** Native Grassland Seeding and Planting Per Acre.
- Pay Item No. SP 609S-E:** Watering Per Square Yard.
- Pay Item No. SP 609S-F:** Watering Per Acre.
- Pay Item No. SP 609S-G:** Management Practices Per Square Yard.
- Pay Item No. SP 609S-H:** Management Practices Per Acre.

ADD the following:

- Refer to SP601S and SS612 for topsoil and seed bed preparation.
- Refer to SP608S for management practices.
- Refer to SS603 for irrigation system.

ADD the following pay items:

- Pay Item No. SP 609S-C1:** Native Grassland Seeding, seed spreader, per Square Yard
- Pay Item No. SP 609S-C2:** Native Grassland Seeding, Drill or Cultipacker Seeder, per Square Yard
- Pay Item No. SP 609S-C3:** Native Grassland Seeding, Bonded Fiber Matrix or Fiber Reinforced Matrix Hydromulch, per Square Yard

End

Item No. 610S
Preservation of Trees and Other Vegetation

610S.1 Description and Definitions

This item shall govern the proper care, protection and treatment of trees and other vegetation in the vicinity of the permitted development activity (as defined in Land Development Code 25-1-21(27)). All work shall be performed in accordance with the City approved drawings and specifications (e.g. Standard Series 600) or as approved by the City Arborist (as defined below). Tree pruning and/or treatments shall be performed under the direct supervision of a qualified arborist (as defined below) or as allowed by the City Arborist.

Definitions

City Arborist – City official designated by the Director of the Planning and Development Review Department (Land Development Code 25-8-603) or as designated by the City Arborist.

Oak wilt - a tree disease caused by a fungus "*Ceratocystis fagacearum*" that infects the vascular system of Oak "genus *Quercus*" trees and prevents water transport through the trunk and canopy of the tree. This usually fatal tree disease can be spread by certain insects that come into contact with tree wounds or by interconnected tree roots. February through June is a high risk period due to the stage of the fungus and insect activity. See section 610S.4(H) for additional requirements for preventing Oak wilt infection.

Qualified Arborist – an individual engaged in the profession of arboriculture or closely related field who, through experience, education, and related training, possesses the competence to provide for, or supervise, the management of trees and other woody plants (as defined in the most current version of ANSI A300 (Part 1)-2001, section 4.1).

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text and accompanying tables, the inch-pound units are given preference followed by SI units shown within parentheses.

610S.2 Submittals

The following is a list of the minimum submittal requirements for this specification item shall include:

- A. Identification of the location, type of protective fencing (i.e. A, B or C), materials of construction and installation details;
- B. Qualified Arborist credentials (i.e. proof of certification from the International Society of Arboriculture, licenses, resume and/or references);
- C. Type, location and construction details for proposed tree wells;

- D. Location, type, materials of construction and installation details for permeable paving;
- E. Proposed nutrient mix specifications and when required by the City Arborist, soil and/or foliar analysis for fertilizer applications.

610S.3 Materials

A. Protective Fencing and Signage

Protective fencing is designated as the materials used to protect the root zones of trees as illustrated in City of Austin Standard Detail 610S-1. Three basic types of protective fencing materials are allowed by the City of Austin. Type A and Type B are typical applications and shall be installed where damage potential to a tree root system is high, while Type C shall be installed where damage potential is minimal. The specific type of protective fencing for the work shall be as indicated on the drawings. Type C fence materials shall be subject to approval by the City Arborist. Type C fencing shall be replaced by Type A or Type B fencing as directed by the City Arborist if it fails to perform the necessary function.

1. Type A Chain Link fence (Typical Application-high potential damage)

Type A protective fencing shall be installed in accordance with City of Austin Standard Details 610S-2 and 610S-4 and shall consist of a minimum five-foot (1.5 meters) high chain link fencing with tubular steel support poles or "T" posts.

2. Type B Wood Fence (Typical Application-high potential damage)

Type B protective fencing shall be installed in accordance with City of Austin Standard Details 610S-3 and 610S-5 and shall consist of any vertical planking attached to 2x4-inch (50 x 100 mm) horizontal stringers which are supported by 2x4-inch (50 x 100 mm) intermediate vertical supports and a 4x4-inch (100 x 100 mm) at every fourth vertical support.

3. Type C Other Materials (Limited Application-minimal potential damage)

The following materials may be permitted as alternates for limited or temporary applications (3 days or less) where tree damage potential is minimal (as determined by the City Arborist):

(a) High visibility plastic construction fencing.

The fabric shall be 4 feet (1.2 meters) in width and made of high density polyethylene resin, extruded and stretched to provide a highly visible international orange, non-fading fence. The fabric shall remain flexible from -60°F to 200°F (-16°C to 93°C) and shall be inert to most chemicals and acid. The fabric pattern may vary from diamond to circular with a minimum unit weight of 0.4 lbs./Ft. (0.6 kilograms per meter).

The fabric shall have a 4 foot (1.2 meters) width minimum tensile yield strength (Horizontal) of 2000 psi [13.9 megaPascals], ultimate tensile

strength of 2680 psi [18.5 megaPascals] (Horizontal) and a maximum opening no greater than 2 inches (50 mm).

(b) Other approved equivalent restraining material.

The fencing materials, identified in (a) and (b) above, shall be supported by steel pipe, tee posts, U posts or 2" x 4" (50 mm x 100 mm) timber posts that are a minimum of 5-1/2 feet (1.68 meters) in height and spaced no more than 8 feet (2.44 meters) on centers. The fabric shall be secured to post by bands or wire ties.

4. Signage

A laminated sign, no smaller than 8.5 X 11 inches, shall be posted on each tree protective device, and at least every 100 linear feet on protective fencing, identifying the following information: Tree & Root Protection Zone, Per City of Austin code (Chapter 25-8, Subchapter B, Article 1) this protective device is to remain in place for the entirety of the development project and illegal removal is subject to fines and work suspensions. Additional information can be obtained at the City Arborist (512-974-1876) web site (<http://www.ci.austin.tx.us/trees>). Zona de Protección del Árbol y las Raíces: el dispositivo protector debe quedarse en el lugar para la totalidad del proyecto de la construcción. Para información adicional, contacta la Arborista Municipal (512) 974-1876 o http://www.ci.austin.tx.us/trees/trees_spanish.htm.

B. Trunk Protection (Limited Application)

When indicated on the drawings or directed by the City Arborist tree trunk protection shall be provided in accordance with City of Austin Standard Details 610S-4 and 610S-5. Tree trunk protection shall consist of any 2 x 4-inch (50 x 100 mm) or 2 x 6-inch (50 x 150 mm) planking or plastic strapping and shall be attached in a manner that does not damage the tree.

C. Tree Dressing

Wound treatments should not be used to cover wounds or pruning cuts, except when recommended for disease (see section 610S.4 (H)), insect, mistletoe, or sprout control (from ANSI A300 (Part 1)-2001, section 5.4.1).

D. Tree Wells for Raised Grades

When existing grades are raised by more than 4 inches (10.16 cm), the tree root system shall be protected by the installation of tree wells in accordance with City of Austin Standard Detail 610S-6. Native stone or non-toxic timber shall be used for the separator wall of the well and PVC conforming to ASTM D-2729, SDR-35 shall be used for the aeration systems in fill areas.

E. Permeable Paving (Environmental Criteria Manual Section 3.5.A.1)

Permeable segmented pavers in conjunction with PVC pipe aeration system or concrete on gravel base with cored holes shall be used to protect existing tree root zones when indicated on the drawings or directed by the City Arborist.

F. Fertilizer

Humate/nutrient solutions with mycorrhizae components or soil injection at recommended rates are to be used when appropriate. Construction which will be completed in less than 90 days may use materials at half the recommended rates. Alternative organic fertilizer materials are acceptable when approved by the City Arborist.

610S.4 Construction Methods

A. Protective Fencing

All trees and shrubs in the proximity of the construction site shall be carefully checked for damage prior to initiation of the permitted development activity.

All individual or groups of trees, shrubs, and natural areas shown to be protected on the drawings or identified to be protected by the City Arborist, shall be protected during construction with temporary fencing as indicated on the drawings or as directed by the City Arborist.

Protective fences (section 610S.4.A) shall be installed prior to the start of any site preparation work (clearing, grubbing, or grading), and shall be maintained in functioning condition throughout all phases of the construction project.

Protective fence locations in close proximity to intersecting streets or drives shall adhere to the sight distance (Section 1.3.1.C.6) and desirable sight triangle (Figure 1-6 criteria found in the City of Austin Transportation Criteria Manual).

1. Protective fences shall be constructed at the locations (typically the outer limits of the critical root zone) and with materials indicated on the drawings to prevent the following (Environment Criteria Manual, Appendix P-2, Note 6):
 - (a) Soil compaction in the root zone area resulting from vehicular traffic or storage of equipment or materials.
 - (b) Critical root zone disturbances due to grade changes [greater than 4" (10.16 cm) cut or fill] or trenching not reviewed and authorized by the City Arborist.
 - (c) Damage to exposed roots, trunks or limbs by mechanical equipment.
 - (d) Other activities detrimental to trees such as chemical storage, concrete truck cleaning, and fires.
2. Exceptions to the installation of protective fences at the tree drip lines may be permitted in the following cases:
 - (a) Where there is to be an approved grade change, impermeable paving surface, tree well, or other such site development, the fence shall be erected no more than 2 feet (0.6 meters) beyond the area of disturbance unless approved by the City Arborist;
 - (b) When permeable paving is to be installed within a tree's critical root zone, the fence shall be erected at the outer limits of the permeable paving area (prior to any site grading so that this enclosed area is graded separately to minimize root damage);

- (c) When trees are located close to a proposed building or other construction activity (Environment Criteria Manual, Appendix P-2, Note 6.c), the fence shall be erected up to 10 feet (3 meters) to allow work space between the fence and the structure. Apply organic mulch to a depth of 8 inches [30.48 cm] in the unprotected root zone area;
- (d) When there are street-side pedestrian walkways, fences shall be constructed in a manner that does not obstruct safe passage;
- (e) When there are severe space constraints due to tract size or other special requirements, the Contractor shall contact the City Arborist to discuss alternatives.

When any of the exceptions listed above will result in a fence being located closer than five (5) feet (1.5 meters) to a tree trunk, the Contractor shall also protect the trunk with strapped-on planking to a height of 8 feet [2.4 meters] (or to the limits of lower branching) in addition to the fencing requirement (City of Austin Standard Details 610S-4 and 610S-5).

B. Pruning and Repair of Damage

Tree pruning, to provide clearance for the work and/or to remove hazards, shall be performed under the direct supervision of a qualified arborist and shall follow standards identified in ANSI A300 (Part 1), "Pruning". A minimum clearance height of eight (8) feet (2.4 meters) above the street level must be provided and maintained for all existing trees if adjacent to a sidewalk. However, if the limbs of trees overhang the curb line or edge of travel lane of any street, a minimum clearance height of fourteen (14) feet (4.2 meters) is required (Transportation Criteria manual section 6.2.3.A, 4, "Clearance Height"). Pruning shall provide the minimum clearance needed to perform the work or remove a hazard unless otherwise directed by the City Arborist to comply with transportation criteria or to mitigate for damage.

If tree damage compromises a tree's structural integrity then the area shall be adequately secured until a qualified arborist makes an assessment of the tree and corrective actions are completed with approval from the City Arborist. Damage to oak trees shall be treated immediately, with consideration for site safety, to reduce the risk of Oak Wilt infection (See 610S.4.H, "Oak Wilt Prevention"). Tree root wounds shall be treated to remove loose, damaged tissue from in and around the wound or if necessary the root shall be cut cleanly and covered with topsoil, or other material approved by the City Arborist, to prevent drying of root tissue and to create a favorable environment for root sprouting. Trunk wounds shall also be treated to remove loose, damaged tissue around the wound. Tree canopy repairs shall be performed in accordance with the most current version of ANSI A300 (Part 1), "Pruning", to prevent further damage to the tree and to promote recovery of the tree to sound condition. The ANSI standard describes proper pruning methods for limb removal and for making finish pruning cuts.

Trees damaged or removed without prior approval or where minimum design criteria is exceeded due to failure to maintain approved tree protection shall be mitigated (Environmental Criteria Manual section 3.5.4, "Mitigation Measures") in accordance with Land Development Code Chapter 25-8, Subchapter B, Article 1.

All trees damaged during construction shall receive an application of fertilizer within the drip line conforming to Standard Specification Item No. 606S, "Fertilizer" at the rate of 4 pounds per caliper inch (.07 kilograms per caliper mm).

C. Cutting and Filling Around Trees

When the depth of an excavation or embankment exceeds 4 inches (10.16 cm) within the critical root zone of any tree with a trunk diameter greater than 8 inches (200 mm), the City Arborist may require a tree well to be constructed per the City of Austin approved specifications and details (Section 610S.3.D and City of Austin Standard Detail 610S-6).

D. Paving Around Trees

Where new paving within the ½ critical root zone of any tree greater than a 8 inches (10.16 cm) diameter is approved, a permeable pavement and aeration system may be required by the City Arborist per the City of Austin Standard Detail (Section 610S.3.E, Environmental Criteria Manual Section 3.5.3.A.1 and Figure 3-8) must be installed as indicated on the Drawings, except for street construction.

E. Tree Removal

Tree removal shall comply with Land Development Code Chapter 25-8, Subchapter B, Article 1. An approved permit, or an approved site plan is required for removal of trees 8" and larger (see Environmental Criteria manual section 3.3.2.A.2 and figure 3-1 for measurement standards) with additional requirements for City Parkland properties and for Hill Country Roadway Corridor sites. Trees 19 inches in diameter and greater are defined as protected trees and require specific review from the City Arborist to approve a permit or site plan for removal. In addition heritage trees require a more extensive evaluation by the City Arborist and may require rulings from boards and commissions.

All trees to be removed shall be performed in a manner that does not damage the canopies, trunks or root systems of remaining trees and that protects all existing facilities, improvements and vegetation. Removal of oak trees shall follow the Oak Wilt Prevention procedures per the City of Austin Standards (Section 610S.4.(H)). All tree material shall be removed from the site unless authorized by the City Arborist or if it will be used as wood chips or mulch.

When a tree or shrub is scheduled for removal, it shall be cut to a maximum depth of 12 inches (30.5 cm) below the surrounding grade (the tree(s) should be removed at grade, and with hand saws, in situations where other tree root systems are present which are to be preserved). When applicable, after tree removal, soil shall be placed in the hole to a depth matching the existing grade.

All damage resulting from tree removal or pruning shall be repaired at the Contractor's own expense and shall follow guidelines in this specification.

F. Final Cleanup

All temporary tree and shrub preservation and protection measures shall be removed when the construction has been completed and any mulch applications shall be removed or reduced to no more than 3 inches (7.62 cm) depth.

G. Root Zone Aeration and Fertilization

As a component of an effective remedial tree care program per Environmental Criteria Manual section 3.5.4, preserved trees within the limits of construction may require soil aeration and supplemental nutrients. Soil and/or foliar analysis should be used to determine the need for supplemental nutrients. The City Arborist may require these analyses as part of a comprehensive tree care plan. Soil pH shall be considered when determining the fertilization composition as soil pH influences the tree's ability to uptake nutrients from the soil. If analyses indicate the need for supplemental nutrients, then humate/nutrient solutions with mycorrhizae components are highly recommended. In addition, soil analysis may be needed to determine if organic material or beneficial microorganisms are needed to improve soil health. Materials and methods are to be approved by the City Arborist (512-974-1876) prior to application. The owner or general contractor shall select a fertilization contractor and ensure coordination with the City Arborist.

Pre-construction treatment should be applied in the appropriate season; ideally the season preceding the proposed construction. Minimally, areas to be treated include the entire critical root zone of trees as depicted on the City approved plans. Treatment should include, but not limited to, fertilization, soil treatment, mulching, and proper pruning.

Post-construction treatment should occur during final revegetation or as determined by a qualified arborist after construction. Construction activities often result in a reduction in soil macro and micro pores and an increase in soil bulk density. To ameliorate the degraded soil conditions, aeration via water and/or air injected into the soil is needed or by other methods as approved by the City Arborist. The proposed nutrient mix specifications and soil and/or foliar analysis results need to be provided to and approved by the City Arborist prior to application (Fax # 512-974-3010). Construction which will be completed in less than 90 days may use materials at ½ recommended rates. Alternative organic fertilizer materials are acceptable when approved by the City Arborist. Within 7 days after fertilization is performed, the contractor shall provide documentation of the work performed to the City Arborist, Planning and Development Review Department, P.O. Box 1088, Austin, TX 78767. This note should be referenced as item #1 in the Sequence of Construction.

H. Oak Wilt Prevention Policy

1. Purpose and Scope

The purpose of this Oak Wilt Prevention Policy is to identify measures that city staff and city-hired contractors and their sub-contractors, who perform the services of removing or trimming trees, will take to prevent the spread of oak wilt.

2. Definitions

Oak Wilt Disease: A tree disease caused by the fungus, *Ceratocystis fagacearum*. The fungus infects the vascular system of a tree. The vascular system contains vessels which transport moisture throughout the tree. The vessels of an infected tree effectively become blocked by the infection of the fungus, and cannot transport adequate moisture to sustain a healthy or living tree. In most cases, the end result is tree mortality.

3 Prevention Policy

- (a) Prior to beginning field work, all city staff associated with projects involving potential contact with oak trees shall be made aware of the city's official Oak Wilt Policy by receiving and reading a written copy of this policy. Staff receiving a written copy of the policy shall include, but not limited to, project managers, equipment operators responsible for removing or trimming trees, or operators using heavy equipment which could cause wounding of susceptible oaks in the use of the equipment. In addition, individual city departments will provide a written copy of the Oak Wilt Policy to contractors participating in city projects in areas where oak trees are present before initiating field work.
- (b) When possible, city staff and contractors should avoid trimming, pruning, or wounding Live Oaks and Red Oaks (Spanish, Shumard, Texas Red, and Blackjack oaks) from February through June.
- (c) At all times and irrespective of limb size, all cuts and wounds to oak trees shall be dressed immediately using a non-phytotoxic tree wound dressing. Stump cuts and damaged roots (both above and below ground) shall also be dressed.
- (d) Disinfection of pruning tools, saws, and related equipment is mandatory during the trimming or pruning of oak trees. Disinfection of tree removal and trimming equipment shall occur before work begins in a project area, between work in individual oak trees, and again prior to leaving a project area. Acceptable disinfectants include either aerosol disinfectant or a 10 percent bleach-water solution.

*NOTE: Although this policy would require the disinfection of pruning equipment before and between oak trees as a precaution, research does not substantiate disinfection as a means of preventing the transmission of the oak wilt disease.

4. Disposal Policy

- (a) Chipping or shredding the wood from infected trees to use as mulch is an acceptable means of recycling the wood. Chipping or shredding allows the wood to dry out quickly, thereby killing the fungus.
- (b) Burning diseased wood is an acceptable means of disposal. Burning diseased logs will kill the fungus, and the fungus will not spread with the smoke.
- (c) Logs from diseased Red Oaks, that are not chipped, shredded, or burned shall be disposed of at a landfill.
- (d) Firewood from diseased Red Oak trees shall not be stored near healthy trees where fungal spores or insects that carry the spores have the potential to spread the fungus to healthy trees. It is recommended to store oak firewood under a sheet of clear plastic, tightly sealing the edges of plastic with soil or bricks. Doing so will prevent any spore carrying beetles from escaping and will solarize and heat the stored firewood to speed the drying process. It is also recommended to use

clear plastic, as black plastic will reveal any escape holes to the beetles.

- (e) In situations where diseased Red Oak trees are identified and are not accessible for chipping, shredding, or removal, the trunk of the diseased tree should be girdled, and the stem treated with an appropriate herbicide to deaden the tree and hasten the desiccation and drying of the wood below the minimum moisture content that could support the development of fungal spores.

610S.5 Measurement

Tree and shrub pruning, fencing, drains, fertilization, etc. will not be measured for payment unless included as a contract pay item. Tree wells for tree protection will be measured by the units, complete in place, conforming to the Drawings and City of Austin Standard Detail 610S-6, "Tree Protection, Tree Wells".

Removal of existing trees will be measured per each tree.

610S.6 Payment

The work and materials prescribed herein with the exception of the Protective Fencing and Tree Well (Tree Protection) will not be paid for directly but shall be included in the unit price bid for the item of construction in which this activity is used, unless a payment item is included as a contract pay item.

Payment will be made under:

Pay Item 610S-A:	Protective Fencing Type A Chain Link fence (Typical Application-high damage potential)	Per Lineal Foot
Pay Item 610S-B:	Protective Fencing Type B Wood Fence (Typical Application-high damage potential)	Per Lineal Foot
Pay Item 610S-C:	Protective Fencing Type C Other Materials (Limited Application-minimal damage potential)	Per Lineal Foot
Pay Item 610S-D:	Tree Well (Tree Protection)	Per Each
Pay Item 610S-E:	Tree Trunk Protection, Wood Planking	Per Each
Pay Item 610S-R:	Removal of Existing Trees	Per Each

End

SPECIFIC CROSS REFERENCE MATERIALS**Specification Item 610S, "Preservation of Trees and Other Vegetation"**City of Austin Standard Specification Items

<u>Designation</u>	<u>Description</u>
Item No. 606S	Fertilizer

City of Austin Standard Details

<u>Designation</u>	<u>Description</u>
Item No. 610S-1	Tree Protection Fence Locations
Item No. 610S-2	Tree Protection Fence, Type A, Chainlink
Item No. 610S-3	Tree Protection Fence, Type B, Wood
Item No. 610S-4	Tree Protection Fence, Modified Type A, Chainlink
Item No. 610S-5	Tree Protection Fence, Modified Type B, Wood
Item No. 610S-6	Tree Protection, Tree Wells

City of Austin Transportation Criteria Manual

<u>Designation</u>	<u>Description</u>
Section 1.3.1.C.6	Sight Distance
Section 6.2.3.A.4	Clearance Height
Figure 1-6	Desirable Sight Triangle

City of Austin Environmental Criteria Manual

<u>Designation</u>	<u>Description</u>
Appendix P-2, Note 6	Exceptions to Installing Fences
Appendix P-2, Note 6c	Trees close to proposed buildings-----
Appendix P-6	Remedial Tree Care Notes
Section 3.3.2.A.2	Diameter of trees-----
Section 3.5.0	Design Criteria
Section 3.5.3.A.1	Permeable Paving
Figure 3-8	Example of Minimum Design Criteria Applied to Permeable Parking

City of Austin Land Development Code

<u>Designation</u>	<u>Description</u>
Section 25-8-603	Tree Protection Administration
Section 25-8-623	Inspection by City Arborist

ASTM, American Society for Testing and Materials

<u>Designation</u>	<u>Description</u>
D-2729	Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings

RELATED CROSS REFERENCE MATERIALS

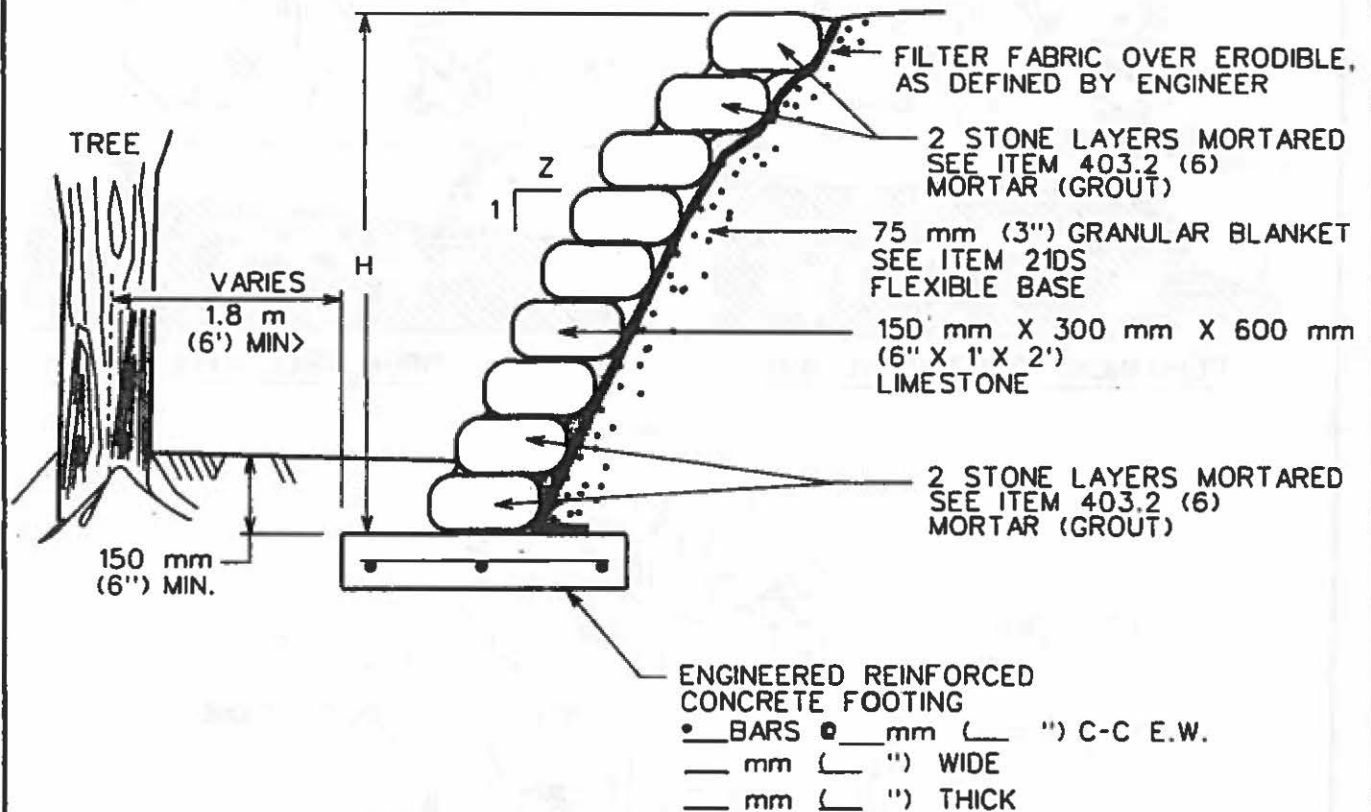
Specification 610S, "Preservation of Trees and Other Vegetation"

City of Austin Standard Specification Items

<u>Designation</u>	<u>Description</u>
Item No. 101S	Preparing Right of Way
Item No. 102S	Clearing and Grubbing
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 132S	Embankment
Item No. 608S	Planting

Texas Department of Transportation: Standard Specifications for
Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work
Item No. 160	Furnishing and Placing Topsoil
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering



THIS STANDARD APPLIES ONLY UNDER THE FOLLOWING CONDITIONS:

- H AND Z ARE SPECIFIED ON THE DRAWING.
- GROUNDWATER IS NO HIGHER THAN THE BOTTOM OF THE FOOTING.
- THE MATERIAL BELOW THE FOOTING IS FIRM AND STABLE.
- THE MATERIAL BEHIND THE WALL HAS A LEVEL SURFACE.
- THE MATERIAL IN FRONT OF THE WALL HAS A SLOPE NO STEEPER THAN 4 HORIZONTAL TO 1 VERTICAL.
- THE FACE OF THE WALL IS NO STEEPER THAN 1 HORIZONTAL TO 2 VERTICAL.
- SURCHARGE LOADS BEHIND THE WALL ARE NO CLOSER THAN DISTANCE H FROM THE TOP OF WALL.

NOTES:

- DESIGN AND CONSTRUCTION OF ROCK WALL SHALL CONFORM TO THE REQUIREMENTS OF CITY CODE 16-7-2, PLACEMENT OF FENCES IN STREET CORNER AREAS, AND THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL FOR MINIMUM SIGHT DISTANCE.
- CONCRETE SHALL CONFORM TO ITEM 4D3S, "CONCRETE FOR STRUCTURES".

CITY OF AUSTIN
DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW

SLOPE PROTECTION AND TREE WELLS

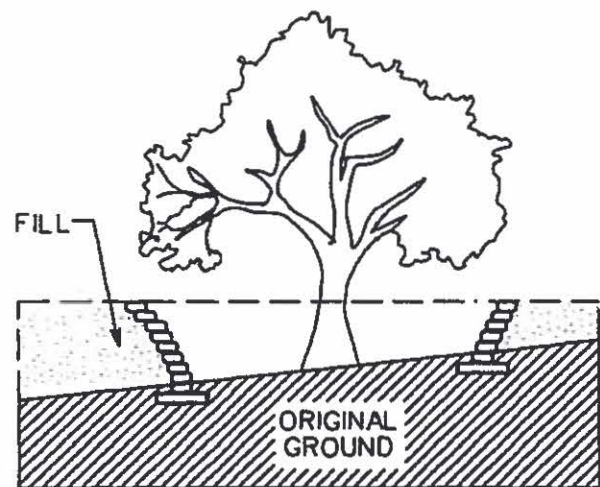
APRIL 14
3/13/09
ADOPTED

THE ARCHITECT/ENGINEER ASSUMES
RESPONSIBILITY FOR APPROPRIATE USE
OF THIS STANDARD.

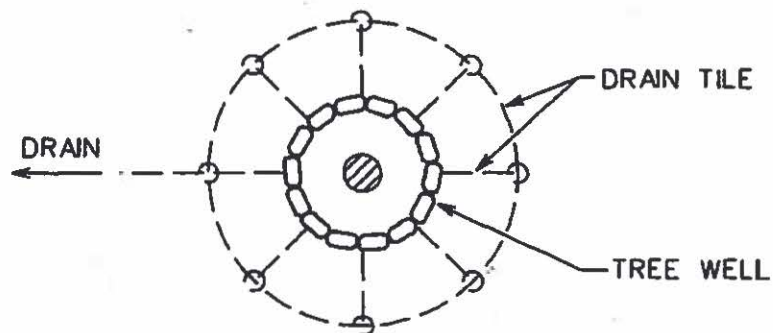
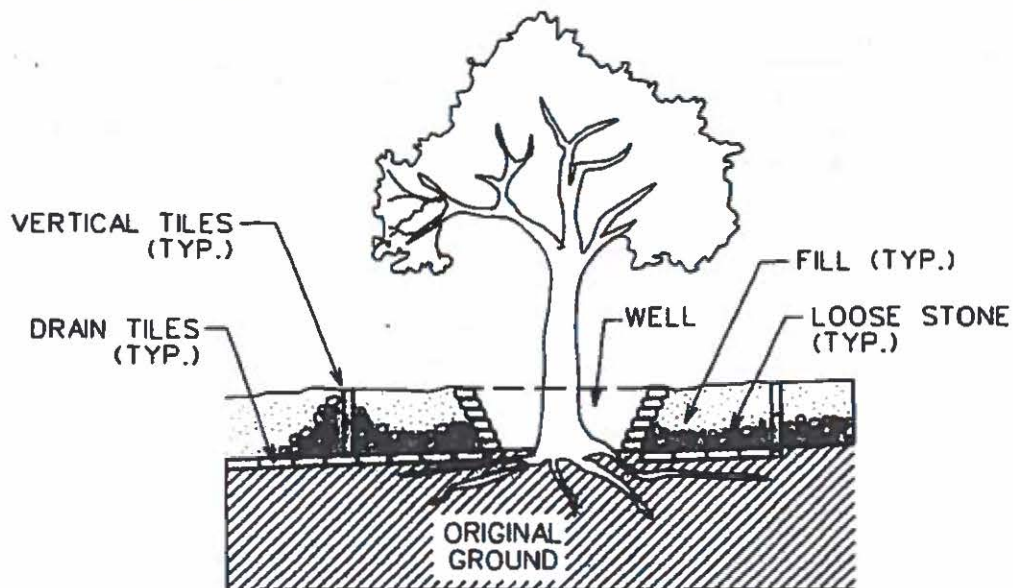
STANDARD NO.
610S-6
1 OF 2



PERMANENT PROTECTIVE WALL



OPEN TREE WELL



TREE WELL WITH RAISED GRADE

CITY OF AUSTIN
DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW

SLOPE PROTECTION AND TREE WELLS

J. P. N. / LS 3/12/06
ADOPTED

THE ARCHITECT/ENGINEER ASSUMES
RESPONSIBILITY FOR APPROPRIATE USE
OF THIS STANDARD.

STANDARD NO.
610S-6
2 OF 2

**SPECIAL PROVISION To
Standard Specification Item 610S (Version 01/04/11)
Preservation of Trees and Other Vegetation**

These special provisions serve to modify, add to, and/or delete from the City of Austin Standard Technical Specification Item No. 610S: Preservation of trees and other vegetation, dated 1/4/2011. Any item, paragraph, article, or work contained therein unless specifically modified, added to or deleted herein shall apply where applicable.

610S.3 Materials**D. Tree Wells for Raised Grades**

ADD the following sentence to the end of the paragraph:

Installation of tree wells in rocky conditions is considered a premium installation.

ADD the following items to the end of the section:

G. Mulch

1. Mulch for placement in access routes, storage / staging, and other areas for protection of trees and prevention of rutting, shall be coarsely ground native hardwood mulch.
2. Fresh or partially composted, coarse [greater than ¾ inch (18 mm) average wood particle size] wood-chip mulch from trees is preferred when the objective is to improve soil structure and enhance soil biological activity.
3. Depth and location of mulch should follow ECM: Appendix K, 3.5.2, and 3.5.4.

610S.4 Construction Methods, B: Pruning and Repair of Damage**B: Pruning and Repair of Damage**

ADD the following to the end of the first paragraph:

Trees shall be pruned immediately after installation to remove limbs with the following characteristics: broken, split, dead, dying, diseased, or those causing structural problems. The intent of pruning is to select a central leader. In no case shall more than one-quarter of the branching structure be removed. The normal or natural shape of the plant shall be retained.

610S.5 Measurement

ADD the following paragraph to the end of the section:

Placement and maintenance of mulch in access roads and storage/staging areas, and removal and re-vegetation post-construction, will not be measured; all work, labor,

Preservation of Trees and Other Vegetation

materials and equipment related to placement, maintenance, and removal of mulch will be based on lump sum price bid for the completed installation of mulch. Contractor shall submit a schedule of values related to this pay item.

610S.6 Pay Items

ADD the following pay items:

Pay Item SP 610S-D1	Tree Well (Tree Protection) Standard	per each
Pay Item SP 610S-D2	Tree Well (Tree Protection) Premium	per each
Pay Item SP 610S-E:	Tree Dressing	per each
Pay Item SP 610S-G:	Tree Pruning and Damage Repair	per each
Pay Item SP 610S-H:	Root Zone Aeration for Existing Trees	per S.F.
Pay Item SP 610S-R-1:	Removal of trees 4"- 8" caliper	per each
Pay Item SP 610S-R-2:	Removal of trees 9"- 15" caliper	per each
Pay Item SP 610S-R-3:	Removal of trees 16"-20 caliper	per each
Pay Item SP 610S-R-4:	Removal of trees 21"-25" caliper	per each
Pay Item SP 610S-R-5:	Removal of trees 26"+ caliper	per each

End

SPECIAL SPECIFICATION 612**Topsoil Mix****612.1 Description**

This item shall govern the furnishing and placing of landscape-grade topsoil mix to depths and areas shown on the Drawings or as directed by the Engineer or designated representative.

612.2 Submittals

The submittal requirements of this specification item shall include the test results and soil classification necessary for approval of material as suitable growing medium.

A. Submittals Required Before Construction

1. Current (no more than 90 calendar days before date of submittal) lab analysis report from a State of Texas qualified soil analytical laboratory that clearly demonstrates the proposed material is suitable topsoil mix for plant growth as described below. The tests shall include a particle-size analysis (soil texture), percentage of organic matter, pH, nutrient and micronutrient content, as well as indication of deleterious material, and recommendations on amendments. The Owner may also request Solvita® CO₂ burst test and Earthfort Labs tests for bacteria and fungi count.
2. A notarized statement from the producer of the soil attesting that the mix conforms to this specification.
3. A sample (2-gallon) of proposed planting mix shall be submitted to the Owner or their representative 30 calendar days before installation and be approved before installation. Sample should be labeled including type of material, specification number; name, address, and telephone number of manufacturer or supplier; and address of the location of the source or material stockpile.
4. A description of the location, equipment, and method proposed to mix the material.
5. The samples and analysis reports shall be submitted at the same time.

B. Submittals Required During Construction

1. Delivery tickets indicating type/product name, source and quantities of imported topsoil mix.
2. Written documentation regarding the soil mixing process, including techniques.

612.3 Materials

- A. Topsoil shall consist of material that is clean and friable soil capable of supporting plant life, and is free of stones, weeds, roots, and any other deleterious materials.

- B. Topsoil mix shall be a dark brown to black composted mix with moderate moisture content (40-50% of total weight) of approximately equal proportions of mineral soil and composted yard waste, and inoculated with leaf mold. The topsoil mix shall have been composted together in a static pile for at least 12 months, reaching a temperature of at least 150 degrees for at least 15 days. After composting, the topsoil mix shall be passed through a 3/8-inch screen to remove larger particles.
- C. The mineral soil component of the topsoil shall be an acceptable agricultural, homogeneous material meeting the USDA texture of a loam to sandy loam, with no particles greater than 1/8 inch. High clay content subsoils or soils with redoximorphic features (mottled) are not acceptable.
- D. The compost component shall be well decomposed, stable to very stable, weed-free organic matter source derived from yard trimmings or City approved alternate source. The Carbon/Nitrogen (C/N) ratio shall be less than 25:1 and trace metals test results should "pass". It shall not contain substances toxic to plants and shall not have objectionable odors. It shall not resemble the raw material from which it was derived, and shall be reasonably free of man-made foreign matter.
- E. Mix Parameters:

Parameters	Optimal Range	Reported Units
pH	6.1 – 7.9	pH units
% O.M. Humus	4.5 – 7.0	%, dry weight basis
EC Salts	< 6.00*	mmhos/cm
Nitrate (NO ₃)	35 - 90	lbs/AC
Phosphate (P ₂ O ₅)	50 - 100	lbs/AC
Potassium (K) H ₂ O	75-100 (H ₂ O); 80-125 (CO ₂)	ppm
Sodium (Na)	< 100 (H ₂ O); < 175 (CO ₂)	ppm
Calcium (Ca) H ₂ O	60-120 (H ₂ O); 300-800 (CO ₂)	ppm
Magnesium (Mg) H ₂ O	13-20 (H ₂ O); 60-100 (CO ₂)	ppm
Zinc (Zn)	3-6	ppm
Iron (Fe)	11-21	ppm
Manganese (Mn)	10-20	ppm
Copper (Cu)	1.2 – 2.4	ppm

* Compost-rich soil mixes should have EC Salts <3.00 mmhos/cm when used as topsoil substitute.

612.4 Construction Methods

- A. The topsoil mix shall be protected from all sources of contamination, including weed seeds, from the supplier's yard to the project site.
- B. Areas to receive topsoil mix shall be free of construction debris, refuse, and rocks and earth clods over three inches.
- C. The material shall be placed in loose lifts, not to exceed eight inches each lift, and shall be compacted with a water-filled landscape roller. During installation the material shall be protected from other forms of compaction, including equipment and pedestrian traffic, to the extent possible. Storage of construction materials on top of the topsoil mix is prohibited.
- D. Where the proposed planting area is compacted the existing soil shall be tilled to a minimum depth of six inches before installation of the topsoil mix. For compacted areas in the critical root zone of trees, scarify to one inch maximum.
- E. The topsoil mix should not be placed if the ground is muddy, saturated, or frozen.
- F. For work in critical root zones of trees, all work must be done with hand tools (e.g., shovels, rakes).
- G. After placing and grading the soil mix, planting should commence as soon as possible to minimize possibility of erosion or further compaction. Erosion and sedimentation control devices following City of Austin guidelines are required until permanent stabilization is achieved.
- H. To prevent the compaction of salvaged topsoil, the Contractor shall properly sequence all construction activities, including landscape and irrigation installation, before soil placement. The following activities, among others, shall occur before placing salvaged topsoil:
 - Excavation of all tree pits;
 - a. Excavation of all tree, large shrub pits;
 - b. Installation of trees and shrubs larger the 5-gallon size;
 - c. Trenching and installation of subsurface irrigation components;
 - d. Avoid travel across areas of placed topsoil or minimize the number of travel routes, to the extent possible. Heavy vehicles shall not be permitted in these areas.

612.5 Measurement

"Topsoil Mix " will be measured by the cubic yard (cubic meter: 1 cubic meter equals 1.196 cubic yards), complete in place, as indicated in the Contract Documents.

612.6 Payment

This item will be paid for at the contract unit bid price for "Topsoil Mix." The unit bid price shall include full compensation for all work specified herein, including the furnishing, hauling, placing of all materials; and for all equipment, tools, labor and incidentals necessary to complete the Work.

Pay Item No. 612-A: Topsoil Mix

Per Cubic Yard (CY)

End

SPECIAL SPECIFICATION 613**Fencing and Terracing: Protection of soil and vegetation using landscape timber
(Cedar/Juniper logs)****613.1 Description**

This item shall consist of all materials, labor, and incidentals necessary to perform the work of fence and terrace installation using natural timbers as specified in this section and related documents. These specifications relate to the installation phase, and to the following maintenance phase, as required.

The Specifications indicate and specify a linear based fencing and terracing method, installed as detailed, that will withstand normal weather and overland flow conditions for at least 2 years. Items not specified, but found to be necessary for a complete system, shall be furnished under this Contract.

A. Scope of Work

Install a complete fence or terrace system, which will function to hold soil and/or limit human access to restoration areas.

613.2 Submittals

The submittal requirements for this specification item shall include:

1. Photograph of timber material to be used for this installation.
2. Letter documenting source of material within 100 mile radius of Austin, TX.

613.3 Existing Conditions

- A. Field verify all existing site conditions. By bidding this Work, the Contractor acknowledges that they have satisfied themselves as to the nature of the Work and to the quality of surface and subsurface materials and obstacles insofar as this data is reasonably ascertainable from a site inspection. For example, bedrock and rock present below grade needs to be incorporated into the design so that fence posts are still stable and adequately support the fence. Failure of the Contractor to acquaint themselves with the available information will not relieve their responsibility of proper estimation of the difficulty or cost of successful performance of the Work.
- B. Contractor shall locate all utilities in work area before installation. Any damage to existing utilities occurring during irrigation installation requiring repair or replacement shall be the Contractor's responsibility. This replacement clause extends to existing trees and other landscape materials proposed for preservation.
- C. Fence and terrace layout shall account for slope on a site. Berm timber and fencing should run parallel to (along) slope where possible to avoid aggregating/concentrating flow.

613.4 Materials

Provide all equipment and materials necessary to complete work.

A. Fencing Materials

1. Fence posts
 - (a) Post material must be either "mountain cedar" (*Juniperus ashei*) or Eastern Red Cedar (*Juniperus virginiana*), native to and collected in Central Texas. It must be approximately 6" in diameter at base and between 6 and 8 feet in length.
2. Fence Rails
 - (a) Rail (cross bar) materials are the same as fence posts but generally span 8 feet between posts.
3. Fasteners
 - (a) Rails are bolted to posts via 10" carriage bolt/washer/nut combinations, depending on material and conditions (thickness, stability, etc). Other methods may be used if they are proposed to and accepted by the project manager.

B. Timber terraces

1. Timber soil terrace
 - (a) Same as Fence posts (item 613.4 A1, above).
2. Ground Fasteners
 - (a) Timbers are fastened to the ground material every 3-4' using 1/2" rebar, pounded into the ground at least 12" below grade. If local conditions don't allow for a depth of 12", 1/2" rebar can be used for at least 6" below grade or some other fastening device that affixes the timber terraces to the ground for at least 1 year and can withstand overland flow and submersion in water.

613.5 Construction/Maintenance Methods

Provide all construction equipment and methods required to complete work.

A. System Design and Layout – Timber Fences (See Photos 1-3)

1. Six foot posts will be placed on 8' centers with diagonal braces every 16' and/or where necessary to support a straight line fence. Holes should be dug with a post-hole digger, as narrow as possible, to fit base of 6" posts, to a depth of 18-24" depending on local conditions, soil, slope, etc. Back fill and tamp with local material not more than 6" at a time. There are two rails between each post, one at 2' above grade the other at the top or 4' above grade, attached by notching the rail and/or the post to fit snugly, and using a 1/2" x 8-10" carriage bolt (with washers and nuts).

B. System Design and Layout – Single Rail Trail Fences (See Photos 4)

1. Four foot posts will be placed on 8' centers. Holes should be dug with a post-hole digger, as narrow as possible, to fit base of 6" posts, to a depth of 18-24" depending on local conditions, soil, slope, etc. Back fill and tamp with local material not more than 6" at a time. There is one rail, notched flush with the top of each post, approximately 2 feet above grade. The rail and post are attached by notching one or both to fit snugly, and using a 1/2" x 8-10" carriage bolt (with washers and nuts).

C. System Design and Layout – Timber Terrace (See Photo 5-6).

1. Timber terraces are nominally 8' in length X 6' in diameter but can vary depending on application, slope, etc. They are trenched to 1/3 the nominal diameter, and attached to the ground using ½" rebar every 3-4' and at termination of each timber end. Terraces are primarily to hold soil, resist sheet flow, rutting, rills and surface erosion and to limit foot access to restoration areas or beds.

C. Cleanup

1. Maintain a clean work area during the progress of the Work within reasonable limits of the installation area. Periodically remove all rubbish, debris, etc., from Work site and dispose of legally.
2. Upon completion of the Work, remove all construction and installation equipment from the premises; make ground surface level where it has been affected and remove excess materials, rubbish and debris.
3. Immediately replace and thoroughly hand water any plant material and groundcover which may be displaced during installation.

613.6 Measurement

Work and acceptable material for "Cedar Post Fence/Terrace" will be measured by linear extent (Linear Feet) with all the elements necessary to fulfill the landscape design intent.

613.7 Payment

The work performed will be paid for at the unit price bid for "Cedar Post Fence/Terrace", which price shall be full compensation for furnishing all materials and for performing all operations necessary to complete the work.

613.8 Pay Items

Pay Item SP 613S-A1: Cedar Log Fence, 6-ft-tall, complete and in place	Per LF
Pay Item SP 613S-A2: Cedar Log Fence, 4-ft-tall, complete and in place	Per LF
Pay Item SP 613S-A1: Cedar Log Fence, 2-ft-tall, complete and in place	Per LF
Pay Item SP 613S-B: Single Rail Trail Fence, complete and in place	Per LF
Pay Item SP 613S-C: Cedar Log Terrace, complete and in place	Per LF

Photo 1. Example of Timber cedar fence. Photos used with permission from American Youth Works, Austin, TX (AYW).



Photo 2 and 3. Installation of a top rail, showing notch, join and carriage bolt. Photos used with permission from AYW.



Photo 4. Example of a Single Rail Trail fence. Photo used with permission from AYW.



Photo 4, 5 Installation of Timber/Cedar terrace. Photos used with permission from American YouthWorks, Austin, TX.



END

**Item No. 620S
Filter Fabric**

620S.1 Description

This item shall govern the furnishing of materials and for placement of filter fabric as indicated on the Drawings or directed by the Engineer or designated representative. Filter Fabric shall have the capability for allowing the passage of ground water through it without transporting the soil placed around the filter fabric.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

620S.2 Submittals

The submittal requirements of this specification item include:

- A. catalog cuts,
- B. samples of material selected,
- C. testing results,
- D. manufacturer's recommended installation procedures, and
- E. manufacturer certification of compliance with this specification.

620S.3 Materials

A. General

The fabric shall be constructed exclusively of synthetic thermoplastic fibers and may be either woven or non-woven to form a mat of uniform quality. Fabric fibers may be either continuous or discontinuous and oriented in either a random or an aligned pattern throughout the fabric. The fabric shall be mildew resistant, rot proof and shall be satisfactory for use in a wet soil and aggregate environment. The fabric shall contain ultraviolet stabilizers and shall have non-raveling edges.

B. Physical Requirements

The fabric shall meet the requirements of table 1, when sampled and tested in accordance with the methods indicated in the table below.

All material shall be shipped with suitable wrapping to protect the fabric during shipping and storage at the job site.

620S.4 Construction Methods

The submittal requirements shall be completed before any materials are ordered.

The "Filter Fabric" shall be installed in accordance with the manufacturer's recommendations, as indicated on the Drawings or as directed by the Engineer or designated representative. When lapping is required, it shall be in accordance with the manufacturer's recommendations. Backfilling around the Filter Fabric shall be done in such a manner that the Filter Fabric material will not be damaged during the placement.

TABLE 1: FILTER FABRIC REQUIREMENTS

Original Physical Properties	Test Method	Requirements
Fabric weight (mass), on an ambient temperature air-dried tension free sample, expressed in oz/ sq. yd (grams/ square meter)	TxDoT Tex-616-J*	Underdrains/Slope Stabilization 4.0 (135) minimum
		Gabions and Revet Mattresses 6.0 (200) minimum
Water flow rate by falling head method, 7.9 inches (20 cm) to 3.9 inches (10 cm) on 2 inch (50 mm) ID cylinder with 1 inch (25 mm) diameter orifice, with flow rate expressed in gal/sq.ft/minute (liters/square meter/minute).	TxDoT Tex-616-J*	80 (3,260) minimum
Breaking load in either machine or cross-machine direction, expressed in pounds (newtons)	ASTM D-1682 grab method G**	100 (445) minimum
Equivalent opening size for US Standard (SI) sieves.	CW-02215	70 to 100 (212 to 150 μ m)
"Apparent elongation" at breaking load in either machine or cross-machine direction, expressed as percent	ASTM D-1682 grab method G**	100 maximum

* TxDoT Tex-616-J, "Testing of Construction Fibers"

** ASTM D 1682 grab method G, "Test Methods for Breaking Load and Elongation of Textile Fabrics" as modified by TxDoT Test Method Tex-616-J

*** CW-02215, US Army Corps of Engineers, Civil Works Construction Guide Specification "Plastic Filter Fabric".

620S.5 Measurement

Work and acceptable material for "Filter Fabric" will be measured by the square yard (square meter: 1 square meter equals 1.196 square yards), complete in place.

620S.6 Payment

The work performed and the materials furnished and measured as provided under "Measurement" will be paid at the unit bid price for "Filter Fabric". The unit bid price, when included in the contract as a pay item, shall include full compensation for all materials, excavation and backfilling and all manipulations, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item No. 620S: Filter Fabric

Per Square Yard.

End

SPECIFIC CROSS REFERENCE MATERIALS

Specification 620S, "Filter Fabric"

American Society for Testing and Materials (ASTM)

<u>Designation</u>	<u>Description</u>
D 1682	Test Methods for Breaking Load and Elongation of Textile Fabrics

Texas Department of Transportation Manual of Testing Procedures

<u>Designation</u>	<u>Description</u>
Tex-616-J	Testing of Construction Fabrics

RELATED CROSS REFERENCE MATERIALS
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City of Austin Environmental Criteria Manual

<u>Designation</u>	<u>Description</u>
Section 1.4.2.E	Rock Berm

City of Austin Standard Details

<u>Designation</u>	<u>Description</u>
Number 639S-1	Rock Berm

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 101S	Preparing Right of Way
Item No. 102S	Clearing and Grubbing
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 401	Structural Excavation and Backfill
Item No. 602S	Sodding for Erosion Control
Item No. 604S	Seeding for Erosion Control
Item No. 605S	Soil Retention Blanket
Item No. 606S	Fertilizer
Item No. 608S	Planting
Item No. 610S	Preservation of Trees and Other Vegetation

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 169	Soil Retention Blanket
Item No. 204	Sprinkling

Item No. 623S
Dry Stack Rock Wall

623S.1 Description

This item shall govern furnishing and placing dry stack gravity rock walls (Environmental Criteria Manual Section 1.8.2.B.6) in conformance with Standard Detail 623S.1 and as herein specified on a prepared subgrade, including the excavation and backfilling for the wall, to the height, lines, grades, details and locations indicated on the Drawings or as established by the Engineer or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

623S.2 Submittals

The submittal requirements for this specification item shall include:

- A. Aggregate types, gradations and physical characteristics for the Portland cement concrete mix,
- B. Proposed proportioning of materials for the mortar mix,
- C. Test results for the weathered field limestone,
- D. Aggregate type and gradation scheduled for granular blanket,
- E. Description of filter fabric including characteristics, test data and manufacturer's recommendations for installation

623S.3 Materials**A. Rock**

Native Rock shall be durable weathered field limestone of suitable quality to ensure permanence in the structure. The stone shall have a wearing loss less than 35 percent when the stone is tested with the Los Angeles Abrasion Machine in accordance with ASTM Test Method C535 (TxDOT Test Method Tex-410A). The loss of material experienced during five cycles of magnesium sulfate exposure conducted in accordance with TxDOT Test Method Tex-411A for Rock RipRap shall not exceed 18 percent.

B. Concrete

Concrete for footings shall be Class A Concrete and conform to Standard Specification Item No. 403S, "Concrete for Structures".

C. Granular Blanket

Flexible Base aggregate conforming to Standard Specification Item No. 210S, "Flexible Base", shall be used for the granular blanket.

D. Mortar

Mortar shall consist of 1 part masonry cement to 3 parts sand by volume, based on dry materials. Mortar which has been mixed longer than 30 minutes or which has developed its initial set shall not be used.

E. Filter Fabric

Filter Fabric conforming to Standard Specification Item No. 620S, "Filter Fabric", shall be used for dry stack rock walls constructed in erodible soils.

623S.4 Construction Methods

Dry Stack Rock Wall shall be constructed in horizontal courses, on the prepared and compacted subgrade, granular blanket or concrete foundation as indicated on the Drawings and Standard Detail 623S.1. The horizontal and vertical joints of the two lower and upper stone layers shall be mortared. The remaining horizontal and vertical joints shall be dry or mortared as indicated on the Drawings.

623S.5 Measurement

Acceptable work performed as prescribed by this item will be measured by the square foot (square meter: 1 square meter is equal to 10.764 square feet) of finished sloping face. Separate measurement will not be made for backfill, footing or the removal of existing mortared rock walls, and these items shall be included in the unit price bid for the item bids.

623S.6 Payment

Work performed and materials furnished or prescribed by this item and measured as provided under "Measurement" will be paid for at the unit bid price per square foot for "Dry Stack Rock Wall". The unit bid price shall include full compensation for: furnishing all materials, completing all excavation including existing mortared rock walls, constructing the footings, backfilling behind the wall and providing all equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under:

Pay Item No. 623S: Dry Stack Rock Wall - Per Square Foot.

End

SPECIFIC CROSS REFERENCE MATERIALS

Specification 623S, "Dry Stack Rock Wall"

City of Austin Environmental Criteria Manual

<u>Designation</u>	<u>Description</u>
Section 1.8.2.B.6	Construction on Slopes

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 403S	Concrete for Structures
Item No. 210S	Flexible Base
Item No. 620S	Filter Fabric

Texas Department of Transportation: Manual of Testing Procedures

<u>Designation</u>	<u>Description</u>
410-A	Abrasion of Coarse Aggregate Using The Los Angeles Machine
411-A	Soundness of Aggregate By Use of Sodium Sulfate or Magnesium Sulfate

American Society for Testing and Materials (ASTM)

<u>Designation</u>	<u>Description</u>
C-535	Standard Test Method for Resistance of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

RELATED CROSS REFERENCE MATERIALSCity of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 101S	Preparing Right of Way
Item No. 102S	Clearing and Grubbing
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 132S	Embankment
Item No. 606S	Fertilizer
Item No. 608S	Planting
Item No. 610S	Preservation of Trees and Other Vegetation

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 169	Soil Retention Blanket
Item No. 204	Sprinkling

Dry Stack Rock Wall**SPECIAL PROVISION TO****Standard Specification Item No. 623S, Dry Stack Rock Wall (Version 02-24-10)**

For this contract, Item No. 623S Dry Stack Rock Wall of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

For this project, Articles 623S.2 Submittals, 623S.3 Materials, 623S.4 Construction Methods, and 623S.6 Payment shall be amended as follows:

623S.2 Submittals

DELETE this section in its entirety and **REPLACE** with the following:

The Owner shall provide the Contractor with all details for any concrete footing, rock, and mortar mix. Rock walls shall not exceed four feet in height.

A. Rock: Contractor shall provide the source and photos of rock specified by Owner. Photos shall clearly and accurately characterize the size, shape, and colors of the rocks. Owner may request a sample for approval of quality assurance.

623S.3 Materials**A. Rock**

ADD the following to the beginning of the paragraph:

For the purposes of this contract, the size of limestone rock to be used for construction is assumed to range from six inches to eight inches in depth and height, and is flat on top and bottom allowing for easy mortar-less stacking.

623S.4 Construction Methods

ADD the following to the end of the section:

For the purposes of this contract, a "standard" installation shall conform to industry standard practices and conditions (e.g., soil with minimal rock) per City Standard Specification 623S and Standard Detail 623S.1. "Premium" installation may involve extraordinary site conditions (e.g., rocky soil) or other unusual conditions as agreed to by the Owner and the Contractor which hinders the use of standard practices, requiring the use of greater than typical amounts of labor or employment of special equipment in this activity.

Dry Stack Rock Wall

623S.6 Payment

DELETE the following pay items:

Pay Item No. 623S: Dry Stack Rock Wall

Per Square Foot.

ADD the following pay items:

Pay Item SP 623S-A: Dry Stack Rock Wall, Standard

Per Square Foot.

Pay Item SP 623S-B: Dry Stack Rock Wall, Premium

Per Square Foot.

Item No. 627S
Grass-Lined Swale

627S.1 Description

This item governs natural or constructed drainage ways of parabolic or trapezoidal cross section that are located below adjacent ground level and is stabilized by suitable vegetation (Environmental Criteria Manual Section 1.4.3.B). The flow is normally wide and shallow and conveys the runoff down the slope.

A grass-lined swale shall be used when it is necessary to convey runoff only without causing erosion. In cases where there is base flow involved, it shall be handled by the addition of a subsurface drain or a stone or gabion mattress lined low flow channel to the grass-lined swale.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

627S.2 Submittals

The submittal requirements for this specification item shall include:

- A. The submittal requirements (if necessary) for Standard Specification Item Numbers 594S, "Gabions and Revet Mattresses", 602S, "Sodding for Erosion Control", 604S, "Seeding for Erosion Control" and 605S, "Soil retention Blanket".
- B. Aggregate types, gradations, and physical characteristics for the Portland Cement Concrete mix,

627S.3 Materials

A. Grass-lined Swale

1 Seed and Mulch

Seed and mulch shall conform to Item No. 604S, "Seeding for Erosion Control".

2 Sod

Sodding shall conform to Item No. 602S, "Sodding for Erosion Control".

3 Soil Retention Blanket

The soil retention blanket shall conform to Standard Specification Item No. 605S, "Soil Retention Blanket".

627S.4 Construction Methods

Except as indicated on the Drawings or directed by the Engineer or designated representative, all trees, brush, stumps, obstructions and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the waterway.

The waterway shall be excavated or shaped to line, grade, typical sections, and cross-section indicated on the Drawings and shall be free of bank projections or other irregularities, which could impede normal flow.

Fill shall conform to Standard Specification Item No. 132S, "Embankment".

All soil and materials not needed to complete the swale shall be removed.

627S.5 Measurement

Acceptable work performed as prescribed by this item shall be measured by lineal feet (lineal meters: 1 lineal meter equals 3.281 lineal feet) along the centerline of the stone center "pilot" channel.

627S.6 Payment

Work performed and materials furnished for this item shall be paid at the unit bid price per lineal foot.

Payment will be made under:

Pay Item No. 627S-GSS: Grass-Lined Swale	Per
Lineal Foot	

End

<i>SPECIFIC CROSS REFERENCE MATERIALS</i>
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Specification 627S, "Grass-Lined Swale and Grass-Lined Swale with Stone Center"

City of Austin Environmental Criteria Manual

Designation	Description
Section 1.4.4.B.4	Permanent Erosion and Sedimentation Control
Section 1.4.6.B	Standards for Grass-Lined Swales

City of Austin Standard Specifications

Designation	Description
Item No. 132S	Embankment
Item No. 403S	Concrete for Structures
Item No. 594S	Gabions and Revet Mattresses
Item No. 602S	Sodding for Erosion Control
Item No. 604S	Seeding for Erosion Control
Item No. 605S	Soil Retention Blanket

City of Austin Standard Details

Designation	Description
No. 627S-1	Grass-Lined Swale

RELATED CROSS REFERENCE MATERIALS**Specification 627S, "Grass-Lined Swale "****City of Austin Standard Specifications**

Designation	Description
Item No. 101S	Preparing Right of Way
Item No. 102S	Clearing and Grubbing
Item No. 111S	Excavation

Item No. 120S Channel Excavation

Item No. 401	Structural Excavation and Backfill
Item No. 404S	Pneumatically Placed Concrete
Item No. 406	Reinforcing Steel
Item No. 408	Concrete Joint Material
Item No. 410	Concrete Structures
Item No. 606S	Fertilizer
Item No. 608S	Planting
Item No. 610S	Preservation of Trees and Other Vegetation
Item No. 620S	Filter Fabric

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 169	Soil Retention Blanket
Item No. 204	Sprinkling

**Item No. 633S
Landgrading**

633S.1 Description

This item shall govern reshaping the existing topography in accordance with the Drawings and Standard Detail 633S-1, "Landgrading". The purpose of landgrading is to provide for erosion control and vegetation establishment on those areas where the existing topography is to be reshaped by grading.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

633S.2 Submittals

The submittal requirements for this specification item shall include:

- A. Sediment control plan
- B. Seeding plan including:
 - 1. Identification of the type, source, mixture, pure live seed (PLS) and rate of application of the seeding,
 - 2. Type of mulch,
 - 3. Type of tacking agent, and
 - 4. Type and rate of application of fertilizer.

633S.3 Materials

- A. Seeding
 - Seeding shall conform to Item No. 604S, "Seeding for Erosion Control".
- B. Pipe Underdrains
 - Pipe underdrains shall conform to Item No. 551, "Pipe Underdrains".

633S.4 Construction Methods

All sediment control practices and measures shall be constructed and in place before proceeding with the construction of "Landgrading". The sediment control practices and measures shall be maintained in accordance with the sediment control plan. Topsoil and fill materials, which are stripped for the establishment of vegetation, shall be stockpiled in amounts necessary to complete finished grading of all exposed areas. Temporary stockpiles, borrow areas and permitted spoil areas shall be shown on the Drawings and no other areas shall be used for these purposes. Cleared areas, that are to receive fill materials, shall be grubbed to remove trees, vegetation, roots and other objectionable material as required by Standard Specification Item No. 102S, "Clearing and Grubbing". Seeps or springs encountered during construction shall be intercepted and diverted to a

pipe underdrain conforming to Standard Specification Item No. 551, "Pipe Underdrains" and Standard Detail No. 551-1.

Except for approved landfills, fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills. All fills shall be compacted as required by the Drawings and Standard Detail 633S-1 to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with Standard Specification Item No. 132S, "Embankment". All graded areas shall be permanently stabilized and seeded immediately following finished grading.

633S.5 Measurement

Acceptable work performed as prescribed by this item will be measured by either square feet (square meters: 1 square meter equals 1.196 square feet) or acres (hectares; 1 hectare equals 2.471 acres) of the area to be graded, which will include stabilization and groundcover re-establishment.

633S.6 Payment

Work performed and material furnished for this item will be paid for at the unit bid price per square foot or acre of the area graded. Pipe Underdrains, when required, will be paid for in accordance with Item No. 551, "Pipe Underdrains".

Payment will be made under:

Pay Item No. 633S-A:	Landgrading	Per Square Foot.
Pay Item No. 633S-B:	Landgrading	Per Acre.

End

<i>SPECIFIC CROSS REFERENCE MATERIALS</i>
Specification 633S, "Landgrading (LG) "

City of Austin Standard Details

<u>Designation</u>	<u>Description</u>
Number 633S-1	Landgrading

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 102S	Clearing and Grubbing
Item No. 132S	Embankment
Item No. 551	Pipe Underdrains
Item No. 604S	Seeding for Erosion Control

<u>RELATED CROSS REFERENCE MATERIALS</u>
Specification 633S, "Landgrading (LG) "

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 101S	Preparing Right of Way
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 602S	Sodding for Erosion Control
Item No. 605S	Soil Retention Blanket
Item No. 606S	Fertilizer
Item No. 608S	Planting
Item No. 610S	Preservation of Trees and Other Vegetation
Item No. 620S	Filter Fabric

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering
Item No. 169	Soil Retention Blanket
Item No. 204	Sprinkling

**ITEM NO. 640S
MORTARED ROCK WALL****640S.1 Description**

This item shall govern the construction of mortared rock walls, as herein specified, on a prepared subgrade, including furnishing the stone, mortar and other related materials to construct walls, the excavation and backfilling the wall, removal of any old structure or portions thereof encountered, disposal of surplus excavated material and the completion Mortared Rock Walls as indicated on the Drawings or as directed by the Engineer or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

640S.2 Submittals

The submittal requirements for this specification item shall include:

- A. Details concerning the p.c. concrete footing including dimensions of the footing, the p.c. concrete mix design, steel reinforcement, etc.
- B. Source, type and gradation of rock
- C. Mortar mix design.

640S.3 Materials**A. Rock:**

All types used shall be native limestone suitable for horizontal course type construction. The size of rock to be used for construction shall be as indicated on the Drawings, but may vary as approved by the Engineer or designated representative.

- B. Portland Cement: ASTM C 150, Type I
- C. Masonry Cement: ASTM C 91
- D. Sand: ASTM C 144, Natural
- E. Water: Free from matter that could impair suitability for use in mortar
- F. Hydrated Lime: ASTM C 207, Type S
- G. Mortar:

Mortar shall be composed of 1 part Portland Cement, 1 part hydrated lime and 6 parts sand (by volume) and water. Mortar shall have a consistency that insures that it can be easily spread by a trowel. An alternate mix composed of 1 part masonry cement and 3 parts sand may be used. The sand shall be measured damp and loose.

640S.4 Construction Methods

Stone shall be laid plumb, level or true to a line. All stone shall be laid in a full bed of mortar with head joints and edge joints completely filled. The face shall be aligned or exposed as

indicated on the Drawings. Exterior joints that will remain exposed shall be finished in a manner approved by the Engineer or designated representative.

In hot weather, stone work shall be kept moist until the mortar has set. No mortar work will be done when the temperature is below 40°F (4°C) in the shade and all work may be suspended during freezing or undesirable weather. The mortar materials shall be mixed mechanically for not less than 5 minutes after all ingredients are in the mixer. Mortar that has begun to set or that has been mixed for more than 2 hours shall not be used.

Spalls may be used in partially filling the large voids, provided they are keyed in properly and are well coated with mortar. All finished rockwork shall be protected from damage. Chipped rockwork, that will remain exposed, shall be satisfactorily repaired or replaced.

Mortared rock walls shall consist of courses or layers of rock with the spaces between them filled with mortar and shall be constructed at such places as indicated on the Drawings or as directed by the Engineer or designated representative, in accordance with these specifications and in conformity with the lines, grades, height, depth and other details shown on the pertinent typical sections.

Excavation and concrete footings for mortared rock walls shall not be paid for directly, but shall be included in the unit price bid for mortared rock wall construction.

Prior to placing any material, the footings shall have been placed by the Contractor as part of this contract to the approved line and grade and allowed at least 36 hours curing time. The rock shall then be thoroughly wet and bedded in 1 inch (25 mm) of mortar placed on the footings, one against the other, with the resulting voids being completely filled with mortar. The finished surface shall be even and level.

640S.5 Measurement

Mortared rock wall will be measured by the square foot (square meter: 1 square meter equals 10.76 square feet) of the outside, vertical face of wall. No measurement will be made for concrete footing and shall be included in the unit price bid for the rock wall construction.

640S.6 Payment

Mortared rock wall acceptably completed will be paid for at the contract unit bid price per square foot. The unit bid price shall include full compensation for furnishing all materials, for excavation, and backfill, for all forming, transporting, placing, finishing and for all equipment, tools, labor and incidentals necessary to place mortared rock wall on concrete footing as specified and indicated on the Drawings.

Payment will be made under:

Pay Item No. 640S:	Mortared Rock Wall	Per Square Foot.
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End

<u>SPECIFIC</u> CROSS REFERENCE MATERIALS
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Specification 640S, "Mortared Rock Wall"
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American Society for Testing and Materials, ASTM

Designation

Description

C 91	Specification for Masonry Cement
C 144	Specification for Aggregate for Masonry
C 150	Specification for Portland Cement
C 207	Specification for Hydrated Lime for Masonry

<u>RELATED</u> CROSS REFERENCE MATERIALS

Specification 640S, "Mortared Rock Wall"
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City of Austin Standard Specifications

Designation	Description
Item No. 101S	Preparing Right-of-Way
Item No. 102S	Clearing and Grubbing
Item No. 111S	Excavation
Item No. 401	Structural Excavation and Backfill
Item No. 403S	Concrete for Structures
Item No. 405	Concrete Admixtures
Item No. 406	Reinforcing Steel
Item No. 606S	Fertilizer
Item No. 608S	Planting
Item No. 610S	Preservation of Trees and Other Vegetation
Item No. 620S	Filter Fabric

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

Designation	Description
Item No. 100	Preparing Right-of-Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work

Mortared Rock Wall**SPECIAL PROVISION TO****Standard Specification Item No. 640S, Mortared Rock Wall (Version 02/24/10)**

For this contract, Item No. 640S Mortared Rock Wall of the City of Austin Standard Technical Specifications is hereby amended with respect to the clauses cited below. No other clauses or requirements of this Section of the City of Austin Standard Specifications are waived or changed.

For this project, Articles 640S.2 Submittals, 640S.3 Materials, 640S.4 Construction Methods, and 640S.6 Payment shall be amended as follows:

640S.2 Submittals

DELETE this section in its entirety and **REPLACE** with the following:

The Owner shall provide the Contractor with all details for any concrete footing, rock, and mortar mix. Rock walls shall not exceed four feet in height.

A. Rock: Contractor shall provide the source and photos of rock specified by Owner. Photos shall clearly and accurately characterize the size, shape, and colors of the rocks. Owner may request a sample for approval of quality assurance.

640S.3 Materials**A. Rock**

DELETE the second sentence and **REPLACE** with the following:

For the purposes of this contract, the size of limestone rock to be used for construction is assumed to be six inches to eight inches in depth and height.

640S.4 Construction Methods

ADD the following to the end of the section:

For the purposes of this contract, a "standard" installation shall conform to industry standard practices and conditions (e.g., soil with minimal rock) per City Standard Specification 640S. "Premium" installation may involve extraordinary site conditions (e.g., rocky soil) or other unusual conditions as agreed to by the Owner and the Contractor which hinders the use of standard practices, requiring the use of greater than typical amounts of labor or employment of special equipment in this activity.

Mortared Rock Wall

640S.6 Payment

DELETE the following pay items:

Pay Item 640S: Mortared Rock Wall

Per Square Foot.

ADD the following pay items:

Pay Item SP 640S-A: Mortared Rock Wall, Standard

Per Square Foot.

Pay Item SP 640S-B: Mortared Rock Wall, Premium

Per Square Foot.

**ITEM NO. 648S
MULCH SOCK****648S.1 Description**

A Mulch sock consists of material encased in a tube of mesh. It is used to intercept, settle, and filter sheet flow and pond runoff. Mulch socks provide an environmentally sensitive and cost-effective alternative to sediment fences.

648S.2 Submittals

The submittal requirements for this specification item shall include the following:

A. Mulch Material

1. A small sample of mulch material proposed to be used on the site will be provided to the engineer.
2. Provide a designated project stockpile of mulch for sampling and testing at the producer's site.
3. A copy of the lab analysis, performed by an STA-certified lab, verifying that the mulch material meets the requirements of Table 1.

Table 1		
Item	Requirement	Reference Specification
Particle Size	3" minus screening process	Equivalent to TXDOT item 161, Compost, Section 1.6.2.B, Wood Chip requirements
pH	5.5 – 8.5	TMECC 04. 11-A, "1.5 Slurry pH"
Organic Matter Content	25%, dry weight basis	TMECC 05.07-A, "Loss-On-Ignition Organic Matter Method"

B. Tube Material

The CONTRACTOR shall submit a sample of the material that the CONTRACTOR proposes to use on the project. A sample of the material should be accompanied by material data sheet identifying composition, ability of the material to biodegrade, and size of openings in tube at a minimum.

648S.3 Materials

- A. Mulching material can be manufactured on or off the project site and may consist of:
 - 1. Shredded bark
 - 2. Stump grindings
 - 3. Composted bark
- B. The mulch shall have the following composition:
 - 1. Wood chips shall be produced from a 3-inch minus screening process (equivalent to TxDOT item 161, Compost, Section 1.6.2.B Wood Chip Requirements).
 - 2. Large portions of silts, clays, or fine sands are not acceptable.
 - 3. The pH of the mulch shall be between 5.5 and 8.5.
 - 4. The organic matter content shall be greater than or equal to 25% on a dry weight basis.
- C. Mulch material must be free of refuse, physical contaminants, and material toxic to plant growth. It is not acceptable for the mulch material to contain ground construction debris, biosolids, manure, or recyclable material.
- D. Prior to placement, a representative sample of the mulching material must be tested and certified by the project engineer or his/her designee and accepted by the city inspector.
- E. "Sock" material will be 100% biodegradable, photodegradable, or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or any other acceptable material. The material mesh opening should be equal to or less than 3/8 inch (10 mm) and the material tensile strength should be equal to or greater than 44 psi (3.09 kg/cm²).

648S.4 Installation

- A. Use 12 or 18 inch diameter mulch socks for all sediment control applications. This diameter of mulch sock material has proven to be the most consistent for all sediment control applications (TxDOT, April 2006).
- B. Install mulch socks per Figure 1.4.5.F in the City of Austin Environmental Criteria Manual.

- C. Mulch socks should be used at the base of slopes no steeper than 2:1 and should not exceed the maximum spacing criteria provided in the following table.

Slope	Max. Slope Length Between 18 in. Dia. Sock (ft)	Max. Drainage Area (sf) per 100ft of Sock
100:1 - 50:1	100	10,000
50:1 - 30:1	75	7,500
30:1 - 25:1	65	6,500
25:1 - 20:1	50	4,800
20:1 - 10:1	25	2,600
10:1 - 5:1	15	1,300
5:1 - 2:1	10	1,000

Slope	Max. Slope Length Between 12 in. Dia. Sock (ft)	Max. Drainage Area (sf) per 100ft of Sock
100:1 - 50:1	100	6,000
50:1 - 30:1	40	4,000
30:1 - 25:1	30	3,000
25:1 - 20:1	25	2,600
20:1 - 10:1	15	1,300
10:1 - 5:1	10	1,000
5:1 - 2:1	5	500

- D. Place mulch socks at a 5 ft or greater distance away from the toe of the slopes to maximize space available for sediment deposition.
- E. When placed on level contours, sheet flow of water should be perpendicular to the mulch sock at impact and unconcentrated.
- F. Install mulch socks using rebar (#5 minimum with safety caps) a minimum of 48 inches in length placed on 2-ft centers. In order to prevent the movement or floating of the mulch sock during rain events or construction operations, install steel posts on alternating sides of the sock. Drive the posts into the ground to a minimum depth of 24 inches, leaving less than 12 inches of post above the exposed mulch sock.
- G. In order to prevent water flowing around the ends of the mulch socks, point the ends of the socks up slope.
- H. In order to prevent water from flowing between the gaps at adjacent ends of mulch socks, overlap the ends of adjacent mulch socks a minimum of 12 inches. Never stack mulch socks on top of one another.
- I. Mulch Socks should be placed using 'smiles' and 'j-hooks'. See ECM Section 1.4.5 G (Silt Fence)
- J. For steeper slopes, an additional mulch sock can be constructed on the top of the slope and within the slope area as determined by specific field conditions. Multiple mulch socks are recommended on steeper slopes.

- K. Do not use mulch socks in areas of concentrated flow as they are intended to control sheet flow only.

648S.5 Inspection and Maintenance

- A. Inspect mulch socks after installation for gaps under the mulch socks and for gaps between the joints of adjacent ends of mulch socks. Contractor shall repair gaps such that no water flows under or around sock.
- B. Inspect every seven days and within 24 hours of a rainfall event of 0.5 inches or greater. Replace and repair mulch socks as necessary.
- C. Sediment retained by the mulch socks shall be removed when it has reached one third of the exposed height of the mulch socks.
- D. Mulch socks can be vegetated or un-vegetated. Vegetated mulch socks can be left in place. The vegetation will grow in the slope, further anchoring the sock.

648S.6 Payment

The work performed and the materials furnished as prescribed by this item shall be paid for by the linear foot of mulch sock installed.

Payment will be made under:

Pay Item No. 648S:	Mulch Sock	Per Lineal Foot.
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END

<i>SPECIFIC CROSS REFERENCE MATERIALS</i>
Specification Item No. 648S, "Mulch Sock"

City of Austin Environmental Criteria Manual

<u>Designation</u>	<u>Description</u>
1.4.5.F	Mulch Sock
1.4.5.G	Silt Fence

City of Austin Standard Details

<u>Designation</u>	<u>Description</u>
648S-1	Mulch Sock

Item 703
Fencing for Excavations

703.1 Description

This item to consist of temporary safety fencing supported on posts and constructed of materials as indicated and removed when excavation is backfilled.

703.2 Materials

(1) Fabric

- (a) Fabric to be 4 feet in width, made of high density polyethylene resin, extruded and stretched to provide a highly visible international orange, non-fading fence which will remain flexible from -60 F to 200 F, and be inert to most chemicals and acid. Pattern may vary from diamond to circular with a minimum weight per foot of 0.4 lbs./Ft., a 4 foot width minimum tensile yield strength (Horiz.) of 2000 psi, ultimate tensile strength of 2680 psi (Horiz.) and a maximum opening no greater than 2 inches.

(2) Metal Posts

Steel pipe, tee posts, U posts or 2" x 4' timber posts, 5-1/2 feet in length minimum, spaced no more than 8 feet on centers. Fabric to be secured to post by bands or wire ties.

703.3 Construction Methods

Prior to commencing construction suitable "Barricades, signs and traffic handling" devices to be installed to protect workers and public. Safety fencing to be erected to lines and grades indicated. Excavations within 750 ft. of schools or day care centers require special attention by Contractor to secure entry while work is in progress. Fence to be installed prior to excavation and maintained until excavation is backfilled. Fence to be placed a minimum of 4 feet from edge of excavation. Posts to be driven in ground a minimum of 18 inches. At completion of each day's work, safety fencing to be pulled taut, and entry secured. When safety fence is no longer needed, Contractor to remove fence and posts and patch any damage to surfaces.

703.4 Measurement

Safety fencing to be measured by linear foot of fence measured along ground; gates will not be measured separately.

703.5 Payment

Work performed and materials furnished as prescribed by this item, measured as provided under "Measurement", to be paid for at the unit price bid for "Safety Fencing" which price to be full compensation for furnishing, installing and removing safety fencing and gates, including posts, bands or ties, and for manipulations, labor, tools, equipment and incidentals necessary to complete the work, removal and patching damaged surfaces.

Payment will be made under:

Pay Item 703:	Safety Fencing	Per Linear Foot
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